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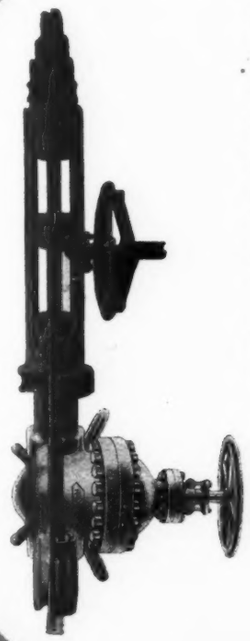

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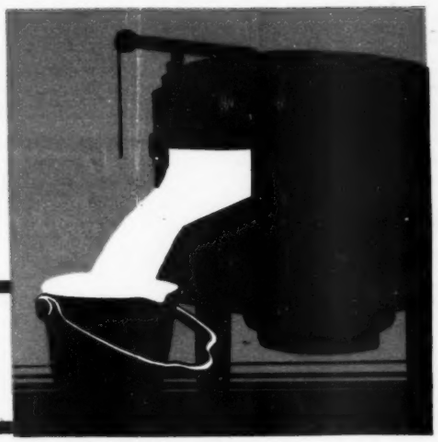

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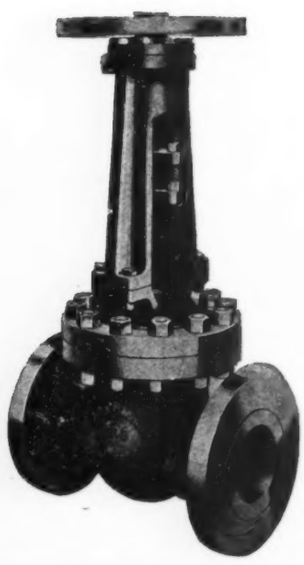

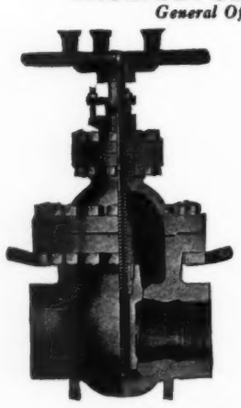

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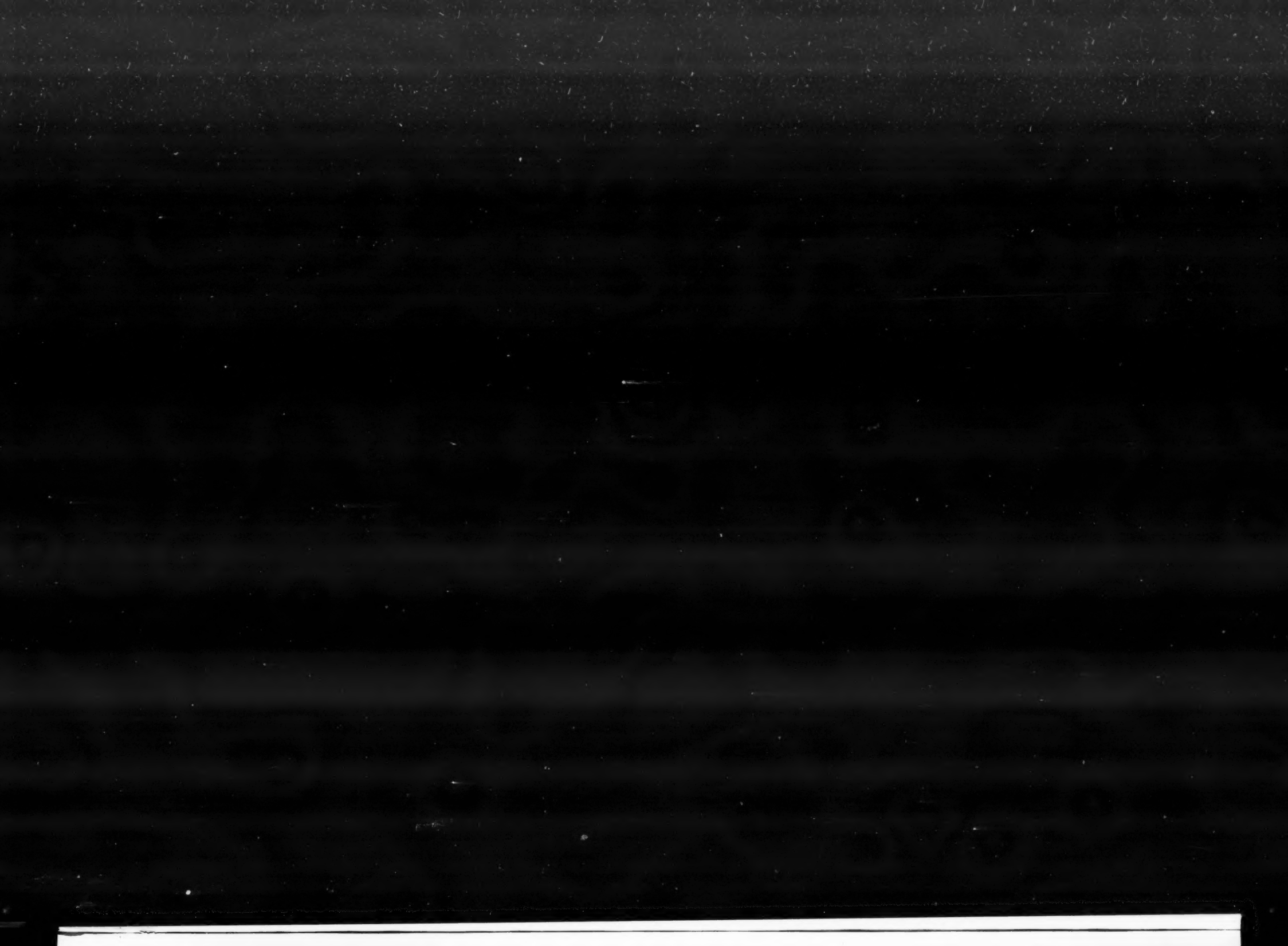

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BRANCH OFFICE CORRESPONDENTS

D. H. Bancroft, 538 Ricou Brewster Building, Shreveport, La.
L. E. Bredberg, 610 Petroleum Building, Fort Worth, Texas.
Paul A. Elliott, Chronicle Office, Muskegon, Mich.
Tolbert R. Ingram, 130 State Office Building, Denver, Colo.
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George A. Whitney, Box 98, Main Postoffice, Toledo, Ohio.
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Recent Developments Create Optimism

Highest production in 1930, week ending Feb. 22, average daily output 2,699,096 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Proration in East Texas, Curtailment of Imports and New Prices in California Regarded as Constructive Measures

By Andrew M. Rowley

Lowest daily average crude oil production in the United States during 1930 was for week ending Dec. 27 with average output of 2,144,074 bbls.

Constructive developments of the past week have created a better feeling regarding the outlook for the petroleum industry as a whole. Of prime importance is proration of production in the new fields of East Texas. The order prepared by the Railroad Commission of Texas provides for an output in East Texas of approximately 70,000 barrels daily now with a gradual increase to 100,000 barrels daily by the end of 90 days, the entire state to be held to about 676,000 barrels.

The previous proration order in Texas provided for a production of 645,000 barrels daily, East Texas not being included. Last week the wells in Rusk and Gregg Counties alone averaged 119,000 barrels daily. Naturally, it will take a few weeks for the new order to be made effective, especially since court action against the order is threatened. However, operators feel past decisions are favorable indications that the order of the Commission will be upheld.

Of interest to the entire industry are the announcements by the four largest companies importing crude oil and gasoline into the United States that these imports will be curtailed materially. The Standard Oil Company (New Jersey) will reduce its imports of crude oil 25 per cent for 90 days, beginning April 10; the Gulf will cut its imports 25 per cent; the Shell will reduce its imports of gasoline 50 per cent during all of this year and the Pan American Petroleum & Transport Co. will curtail its production in Venezuela 23 per cent and reduce its crude imports 23 per cent for a period of 60 days.

Action of the Magnolia Petroleum Company in posting Mid-Continent prices for East Texas crude, a substantial advance over prices which are said to prevail in that area, is a favorable sign.

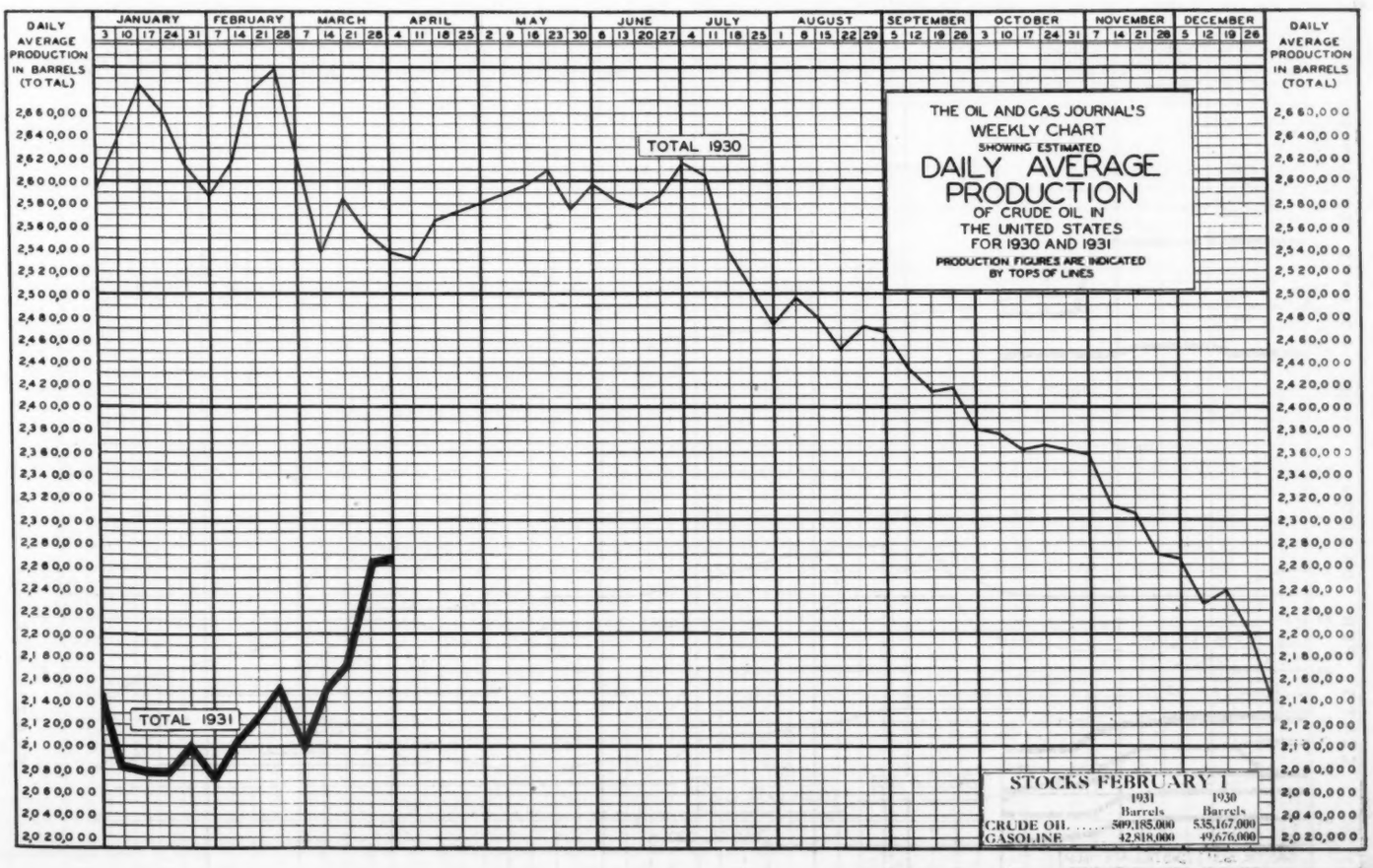
Extremely low prices for gasoline in California resulted in a reversal there of the usual method of pricing crude oil. The Union Oil Company announced a new schedule of prices paying the highest prices for low gravity crude and the lowest prices for the highest gravities. This schedule was met by the Standard Oil Company of California and marks a new step in evaluating crude oil in that area.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended March 28 and a comparison with the previous week follows:

	Mar. 28	Mar. 21
Oklahoma—		
Oklahoma City	120,910	149,145
Seminole-St. Louis	185,480	160,360
Remainder of State	245,740	261,375
Total Oklahoma	552,130	570,880
West Texas—		
Hendricks	47,617	48,615
Yates	95,030	92,181
Remainder	93,135	90,310
Total West Texas	235,782	231,106
North Louisiana	39,715	39,930
Arkansas	46 620	47,245
North Central Texas	78,897	81,850
Texas Panhandle	55,936	54,149
East Central Texas	165,749	139,296
Kansas	109,620	109,450
Total Mid-Continent area	1,284,449	1,273,906
Gulf Coast	170,762	167,808
Southwest Texas	78,852	93,317
Eastern	111,000	109,500
Rocky Mountain area	94,976	97,657
California—		
Santa Fe Springs	73,500	71,500
Long Beach	90,000	91,000
Playa Del Rey	29,250	30,250
Elwood	35,000	38,000
Ventura Avenue	45,000	45,000
Kettleman Hills	24,750	25,000
Remainder of State	232,000	231,000
Total California	529,500	531,750
Total United States	2,269,539	2,263,938

→ **Increase 5,601 Bbls. Daily** ←



Few Changes in Refinery Markets

Oklahoma Prices Fail to Respond to Favorable Developments in Mid-Continent Situation. Fuel Quotations at New Lows

By C. O. Willson

March was brought to a close on Tuesday in the Oklahoma (Group 3) market without the expected upturn in the refined market getting under way. Refinery gasoline and kerosene were holding their own but the fuels including gas oils and furnace oils were lower than they were a week ago. Other products were also dull.

Sellers had hoped that April would open with slightly higher prices for gasolines marking the start of a price recovery which would bring the products to profitable levels within a short time. However, trading was dull the last few days of March and what April sales were consummated were made on the basis of the low prices which have been in effect over the past month. Most Oklahoma refiners were not interested in this April business and will await developments later in the month before attempting to make spot shipments from their plants.

Natural gasoline prices were again reduced, the five grades being quoted over a wide range of 2 to 2¾ cents. The depth to which this market has been allowed to decline can be appreciated when it is realized that present quotations are from 25 to 50 per cent below the average price for a 36-degree gravity crude oil in recent years. Unless this price situation changes in the near future it means important changes in that branch of the industry involving the shutting down of many plants and adjustments of contracts with crude oil producers covering the purchase of casinghead gas. Some of these changes are already under way and if continued will result in a substantial reduction in production in several Mid-Continent fields. By the time producers are paid for the gas most manufacturers now have less than 2 cents a gallon to cover the operation of gathering systems, plants and sales expense.

Encouraging Developments

Although the refined market has not reflected it, there were developments in the oil industry generally the past week which point to improved conditions. Following a hearing last week the East Texas fields will be prorated to the point where the supply will be limited to the ready demand from local refineries and the pipe lines and tank car shipments to outside plants. Proration in the remainder of the State will be continued. The first plant built in the East Texas area is now in operation and the remainder are scheduled for completion within the next 30 to 60 days. The gasoline and other products from the first refinery are being offered for movement to the northern markets and also the southeastern states.

Although this additional refinery output is not welcomed in the Mid-Continent, it is not believed that the actual offering of refined products from East Texas refineries will prove as disturbing to the markets as the uncertainty regarding the proration of the fields' crude oil production has been. All the refineries announced so far are of the skimming type and their combined output will not equal that of one major refinery refining 25,000 bbls. of crude oil daily in a well-balanced skimming and cracking operation.

The posting of a crude oil price schedule for East Texas by one of the major companies has also tended to stabilize conditions. With no yardstick on which to base purchases and uncertainty as to how much the fields were to be allowed to produce, individual operators have sold crude oil at extremely low prices.

In this connection, it is worthy of note not only in East Texas but in other Mid-Continent areas that less distress crude oil is being offered under the posted schedules. Some of the major buyers who have reduced their purchases due to curtailed refinery operations during the winter months are now offering to increase their takings. The fact that refinery operations will be expanded during the spring and summer months and the low prices which make storage programs attractive, account for these increased purchases. Its significance from the refined market angle lies in the fact that it is absorbing all distress crude oil available under the market eliminating a condition which was an important factor in

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REFINED MARKET BAROMETER

The principal weakness in refined markets centered in the coastal areas a development which was partially accounted for by the additional sharp reductions made in several grades of California crude oils. Refinery gasoline prices were lower along the East Coast, Gulf Coast and West Coast. In the eastern states it was feared that the lower California crude oil prices would further weaken the fuel oil market due to increased shipments from California refineries. These shipments have been increasing steadily in recent months. Kerosene prices were also lowered by several refiners with weakness generally apparent in the distillates used as Diesel fuel and furnace oils. Gas oil prices were lowered wherever changes were made. Natural gasolines were lower both in California and the Mid-Continent. No developments of general importance were reported in either lubricating oils or wax.

Mid-Continent—Refinery gasoline prices steady although movement slow last few days of March. Natural gasolines lower. Fair domestic demand for kerosene. Fuels weak in Oklahoma and Texas and prices lower. Furnace oil and gas oil prices lower. Lubricants and wax unchanged.

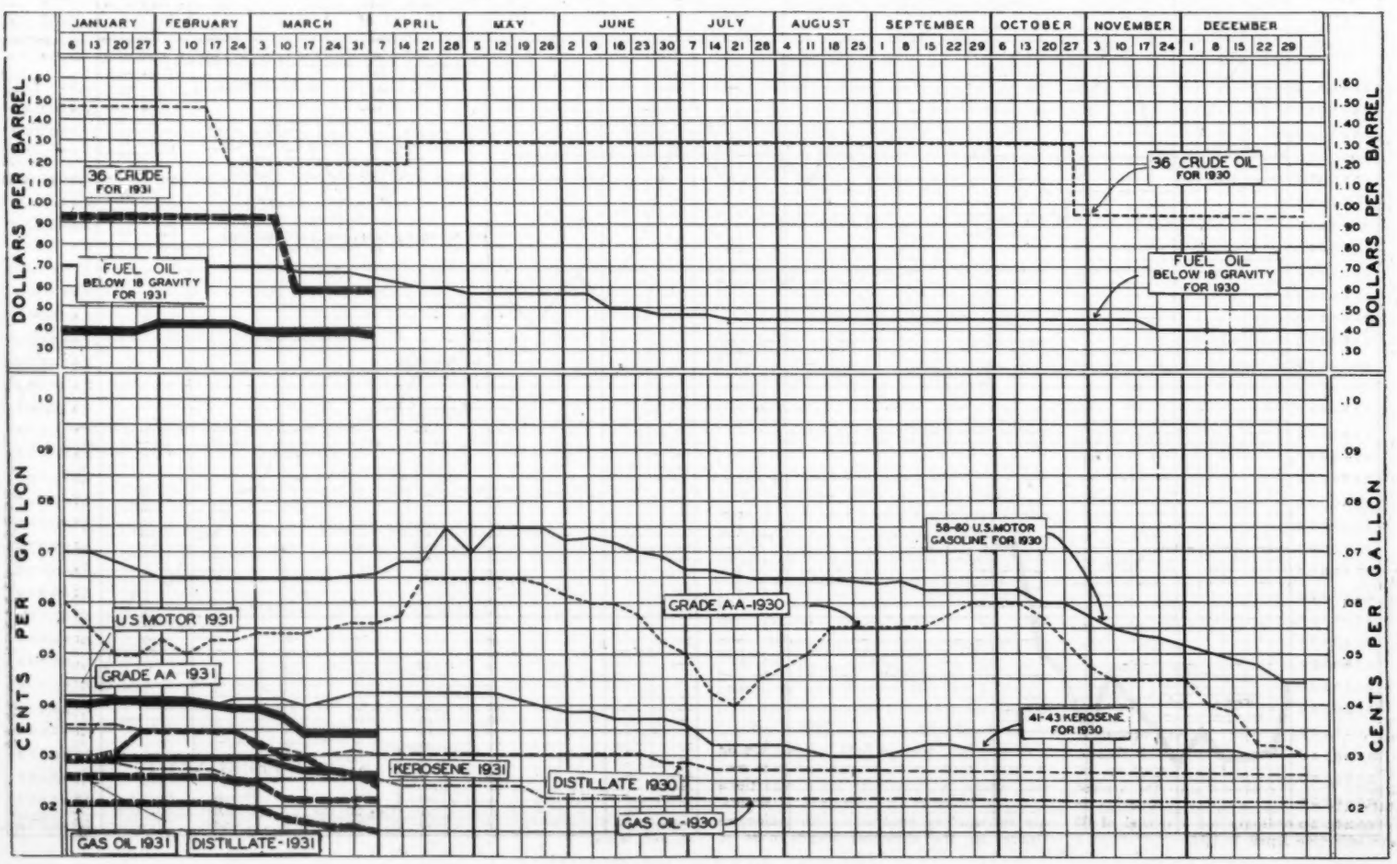
East Coast—Reactionary trend in several products. Refinery gasoline and kerosene prices reduced. Reductions expected in fuel oils and Diesel oil due to increased competition of California refiners although restriction of imports may tend to offset this development. Several grades of bright stock and neutral oils lower. Wax unchanged.

Pennsylvania—Market generally slow. Scattered reductions in gasoline, kerosene and fuel oil prices. No important changes in lubricants and wax.

Gulf Coast—Gasoline prices reduced. Kerosene weak. Slightly firmer tone to market for pale and red oils. Gas oil steady. No change in heavy fuels.

Chicago—Spot demand for gasoline slow first of week with plenty of material offered from several refining groups. All fuels including furnace oil and gas oil weak.

California—Gasoline prices and fuel oil reduced following reductions in crude oil market. Refinery market generally unsettled.



Order Ready for East Texas Proration

Allowable 70,000 Bbls., Rising to 100,000 at End of 90 Days. Lively Hearings Before State Railroad Commission

AUSTIN, Tex., Mar. 31.—The railroad commission has prepared a Texas statewide oil proration order to limit the State to approximately 676,000 bbls. daily, and to bring the new East Texas Field under proration of approximately 70,000 bbls. now, gradually increasing to 100,000 bbls.

The order was expected to be signed today to take effect at midnight.

Former Governor Dan Moody, attorney for East Texas owners, has indicated he will file injunction suit as soon as the East Texas proration is incorporated in the order.

The commission's decision followed last week's hearings on statewide proration, including East Texas, at which R. R. Penn was the chief proponent of proration and Former Governor Moody the leader of the opposing element in East Texas.

Mr. Penn said proration must continue to include some areas not now prorated. He also said some pools are prorating that have been accused of not doing so. He said South Texas would reduce from 190,000 to 150,000 bbls. a day. "The Gulf Coast has kept its word," he said, and it is producing but 150,000 bbls. as promised, and it may have to make other sacrifices."

A prediction by Mr. Penn was that thousands of small wells would have to be closed forever unless something is done to keep them open. "If closed, the loss would be enormous through oil lost and equipment abandoned, and never could be replaced. The most appalling loss in the world today is in the oil industry, which is confronted with an inevitable debacle unless it can be saved through orderly proration which will keep the wells open," he said.

Mr. Penn said the proposed marginal well legislation would be useless if markets could not be had for them. He asked the commission to enforce the common purchaser act to aid the marginal wells, "and the only way to aid them is to prorate the flush production. I and other members of the committee own flush wells which are being prorated. The way to start is at the top and prorate the large fields down so as to give these small wells a chance. Our final plea is that the commission pare down the flush areas to permit every well to remain open and produce."

Mr. Penn introduced four members of the governor's oil states advisory committee, Cicero Murray of Oklahoma, W. H. Cooley of California, W. Scott Haywood of Louisiana and Charles M. Cox of Wyoming, "who are not here to dictate to this commission, but to give any necessary information."

Senator Thomas G. Pollard of Tyler said he was representing 200,000 East Texans and that he might make a motion for continuance as to East Texas. He charged that the committee was not representing East Texas and had held star chamber campaigns without consulting the landowners or others interested.

Winkler and Ector

The first witness was A. B. Capers of Wink, umpire in Winkler and Ector Counties, with 601 wells, mostly small or marginal. About 135 wells making 35 bbls. or less and some are making water, about 18 bbls. to 1 bbl. of oil. Ector County's potential is 30,000 bbls. and under proration is producing 6,100 bbls., with Winkler having 100,000 bbls. potential and prorated to 48,500 bbls. daily. To reduce the flow of the small wells would be to drown them out in water, he said. These wells will last two years longer if kept open, but if closed would cause the loss of 2,000,000 bbls. in Winkler County alone. "There are no bad water conditions in Ector County, because the wells have been pinched in from the beginning," he said, "and thus keeping out the water and preventing the oil being trapped. The gas is saved and the lifting cost reduced.

"Without proration those fields would lose 30 per cent of their production," Mr. Capers said.

He said water in the Winkler Field is due to vertical fractures caused by running the wells wide open.

"Ratable takings under proration would have prolonged the field's life. Had proration been in force from the beginning, the Yates Field conditions would prevail. The landowner lost through reduced royalty."

Mr. Capers said the infiltration of water was influenced by different formations. He was not familiar with the Woodbine sands of East Texas. It is true, he said, that water comes more slowly through sand than through limestone.

Mr. Capers said wells have been lost where closed and where pinched too much, but not as a result of proration. If the price is cut too much, these wells would become unprofitable, close down and be lost.

Mr. Moody asked questions to prove that proration pinching had destroyed some wells, but Mr. Capers said he had never heard of it. "No injury has ever resulted in that field from proration," he said. He said each well presents its own problem of choking and the uniform pinching is not attempted.

Mr. Hardy sought to prove that much oil was produced through water pressure as well as gas pressure. Mr. Capers did not agree. He said there are places where the water might be helpful, but the gas pushes both the water and the oil.

Questions were put by Myron Blalock of Marshall and Tom Hunter of Wichita Falls regarding the effect of proration, Mr. Capers insisting it prolongs the life of a field by conserving the gas pressure, which lifts the oil and holds back the water.

Ray Richmond, proration umpire in Yates, Crane and Upton Counties, said the potential of the field is 3,500,000 bbls. and it is prorated to 89,500 bbls.

"If the wells were to run open they would produce 3,500,000 bbls. the first day and at the end of 30 days would not make more than 10,000 bbls. because of water," Mr. Richmond said, and continued:

"The life of the Yates Field under proration would be about 21 years compared to about six months with the wells wide open. I think 80 per cent of the recoverable oil would be lost if the wells were left open."

He estimated a loss of 400,000,000 bbls. of oil if Yates were run wide open. It contains 401 wells.

In Crane and Upton Counties, he said, there are 600 wells, of which 200 are marginal, making 12 bbls. or less and losing money because lifting and separation costs 35 cents a barrel with overhead and investment added. These 200 wells are making about 1,400 bbls. daily and to close them would lose 500,000 bbls. annually.

Crane and Upton Counties have a po-

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WILL CURTAIL IMPORTS

R. G. Stewart, president of Pan American Petroleum & Transport Co., announced in New York Monday afternoon that Pan American Petroleum & Transport Co. had arranged to curtail its oil imports from Venezuela into the United States 23 per cent and its production in Venezuela accordingly for a period of 60 days effective April 1, 1931.

Standard Meets Union's Cut in Price

Third Reduction in 30 Days Indicates Overproduction of Light Refining Crude, as Unrefinable Oil Prices Are Unchanged

By L. P. Stockman

LOS ANGELES, Calif., Mar. 31.—The Union Oil Co. of California posted another reduction in crude oil prices effective March 30 and the Standard Oil Co. of California met the reduction barrel for barrel, effective March 31. This is the third reduction in crude oil prices made within the past 30 days, the first becoming effective March 10, the second March 15, and the third March 30. These three cuts have reduced 30 gravity crude in Los Angeles Basin fields from $1.88 per barrel to 35 cents per barrel, a net reduction of $1.03. All three crude oil price reductions have indicated an overproduction of light refining crude as the heavier unrefinable grades have remained unchanged.

These schedules clearly indicate the adoption of a new program whereby refined oil prices will determine the price to be paid for crude oil at the well. This will permit refiners to increase the posted price of crude oil coincidentally with any upward revision in the price of refined oils.

The new crude oil price schedule of the Union and Standard marks the first time in many years when heavy unrefinable crude has commanded a higher price than light refinable crude, as crude ranging from 14 to 20 degrees inclusive is being purchased on the basis of 65 cents per barrel as compared with 35 cents per barrel for oil testing 30 degrees and above. This is due to the fact that the lighter grades of refinable crude have caused the drastic reduction in gasoline prices on the Pacific Coast whereas, the fuel oil market has remained fairly stable.

Curtailment Program Weakened

There has been a general weakening in curtailment work during the past several weeks due partly to price reductions and the inability of operators to negotiate satisfactory contracts with major refiners. As the situation stands none of the large companies has made any additional commitments for the purchase of crude oil since the first of the current year, due to the fact that all of them have an excess production above requirements and are burdened with surplus stocks of crude and refined oils. This has left independent operators without a market for more than 15,000 bbls. of daily crude oil production.

In addition to this oil which has had to be shut in because no outlet is available a number of other operators undoubtedly will be obliged to suspend production activities or continue to operate at a loss because existing prices for crude oil are below actual lifting costs which in most cases range from 40 cents per barrel upward. It is not likely therefore that there will be any increase in state production owing to partial voiding of the existing curtailment program for the simple reason that operators will

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CALIFORNIA CRUDE OIL PRICES

Gravity—	Alamitos Heights, Signal Hill, Seal Beach, Torrance, Athens, Rosecrans, Dominguez, Santa Fe Springs, Montebello, Huntington Beach, East Coyote, Richfield, Brea Olinda		Santa Paula		Orcutt		Coalinga, Midway-Sunset, Elk Hills, Buena Vista Hills, Lost Hills	
	New price	Old price	New price	Old price	New price	Old price	New price	Old price
11 to 11.9	....	....	....	....	..	....	.50	....
12 to 12.9	....	....	....	....	....	..	.50	....
13 to 13.9	....	....	....	....	....	....	.50	....
14 to 14.9	.65	.65	.60	.65	.55	.55	.55	.55
15 to 15.9	.65	.65	.60	.65	.55	.55	.55	.55
16 to 16.9	.65	.65	.60	.65	.55	.55	.55	.55
17 to 17.9	.65	.65	.60	.65	.55	.55	.55	.55
18 to 18.9	.65	.65	.60	.65	.55	.55	.55	.55
19 to 19.9	.65	.65	.60	.65	.55	.55	.55	.55
20 to 20.9	.65	.66	.58	.65	.53	.56	.53	.56
21 to 21.9	.62	.66	.56	.65	.51	.56	.51	.56
22 to 22.9	.59	.66	.53	.65	.49	.56	.49	.56
23 to 23.9	.56	.66	.50	.65	.47	.56	.47	.56
24 to 24.9	.53	.66	.47	.66	.45	.56	.45	.56
25 to 25.9	.50	.67	.44	.66	.43	.57	.43	.57
26 to 26.9	.47	.67	.41	.66	.41	.57	.41	.57
27 to 27.9	.44	.67	.38	.66	.39	....	.39	.57
28 to 28.9	.41	.67	.35	.66	.37	....	.37	.57
29 to 29.9	.38	.67	.35	.66	.35	....	.35	.57
30 to 30.9	.35	.68	.35	.67	.35	....	.35	.58
31 to 31.9	.35	.68	.35	.67	.35	....	.35	.58
32 to 32.9	.35	.68	.35	.67	.35	....	.35	.58
33 to 33.9	.35	.68	.35	.67	.35	....	.35	.58
34 to 34.9	.35	.68	.35	....	.35	....	.35	....
35 to 35.9	.35	.69	.35	....	.35	....	.35	....
36 to 36.9	.35	.69	.35	....	.35	....	.35	....
37 to 37.9	.35	.69	.35	....	.35	....	.35	....
38 to 38.9	.35	.69	.35	....	.35	....	.35	....
39 to 39.9	.35	.69	.35	....	.35	....	.35	....
40 and above	.35	.70	.35	....	.35	....	.35	....

New Ideas Advanced at A.P.I. Meeting

Discussion of Unit Operation at Tulsa by Division of Production Develops Interesting Suggestions

By L. G. E. Bignell
Petroleum Engineering Editor

While the storm that broke over Oklahoma Thursday, March 26, undoubtedly had its effect on keeping out of town members of the division of production of the American Petroleum Institute from attending the spring meeting of the Mid-Continent district in Tulsa on that date, it certainly had no chilling effect upon the discussion that followed the reading of the papers by the 100 or more members present.

R. W. Bond, of the Shell Petroleum Corp., Tulsa, presided and introduced Carl A. Young, secretary of the division of production from Dallas, Tex., who outlined some of the proposed work of the division for this spring and summer. The mid-year meeting will be held in Dallas June 3 and 4.

The program was started with an extemporaneous talk by R. S. McFarland, vice president of the Sunray Oil Co. on "Overproduction and Why?". James A. Veasey, counsel for Carter Oil Co., Tulsa, was unable to attend because of illness.

Mr. McFarland's Talk

Mr. McFarland said overproduction might be attributed to many causes but in general it might be said that too much efficiency is the basic cause in the petroleum industry, as in practically all other industries suffering from like troubles.

"While I entered the industry as a geologist," said Mr. McFarland, "I hold no brief for the geologists for they know that in many fields they have aided in the rapid development, not necessarily by locating the oil structure from surface indications or by the use of geophysical instruments, but by interpretations of the evidence found by the drill in wildcat territory.

"An instance of this kind is now before the industry in the rapid development in the East Texas fields. This area did not give any surface indications of the oil pools underneath, but when the first well was completed the geologists immediately made a study of the log and predicted it to be a sand that would probably cover a considerable area. This knowledge caused the widespread drilling campaign and the possibility of overproduction in that field."

Mr. McFarland traced briefly the advances that have been made since geologists were first employed in the industry down to the use of the geophysical instruments, and said that now there seems to be no need for worry about the future supply of oil, in fact, there is plenty of oil and the industry should use every effort to impress upon those outside of the industry that this is the case so adverse criticism of the petroleum industry will be minimized and at the same time those inclined to invest in wildcat schemes with the hope of sudden wealth accruing to them will be disposed to keep their money, or invest it in the stock of established companies.

It is true that geologists will not agree upon the amount of probable future supply of oil for despite the high degree to which the science of geology, production and petroleum engineering has developed thre is still a wide difference of opinions as to the quantity of oil that is to be recovered in this country.

Mr. McFarland illustrated this by stating that in conversation with a well informed geologist from California he had been told there was not to exceed 10 years supply in that State, and this in the face of the recent active development in the Kettleman Hills area where others have predicted that in the north portion of the North Dome alone there is sufficient oil and gas to provide all of the United States with gasoline for 15 or 20 years to come.

Misunderstood Terms

The main fact is that there is plenty of oil available now and for some time to come, and long before it can possibly be exhausted the different branches of the industry can secure as much more as may be necessary, and if it were possible to have a reserve of oil without a potential the price structure would be much improved.

"'Conservation,' 'proration,' and 'potential' are the three most misunderstood words in the oil business," according to Mr. McFarland. "To many 'conservation' means to hoard our own oil and use cheap foreign oil, while to others it takes its true meaning, the elimination of waste and control of drilling so that new pools will only be opened as needed.

"Proration means curbing overproduction, but many think of it as causing a loss of profits. It is necessary under present conditions and, according to many, it wil be a part of the program of the industry for some time to come.

"Potential of oil in pools seems to me to be much overrated and exaggerated. It seems that new methods must be developed to measure the reserve of oil underground and just what these new methods will be does not seem clear at this time," but Mr. McFarland seemed to think that longer test flows of wells is one essential needed to secure the gauge of a well from which a reliable estimate of capacity may be made.

In the discussion of Mr. McFarland's address Richard Hughes stated that with their past experiences in operating pools in the various fields the geologists should now be able to form some fairly accurate

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Californians Perfecting Association

Manufacturers of Petroleum Equipment Appoint Committee to Complete Details of Export Organization

By L. P. Stockman

The second meeting of the National Association of American Petroleum Equipment Exporters was held in the convention hall of the Oil Equipment and Engineering Exposition in Los Angeles March 25. A group of about 75 representatives of manufacturers assembled and took definite action toward perfecting the organization. The meeting was presided over by W. R. Martin of Martin-Decker Corp. and was opened with a number of informal talks which emphasized the need of such an association.

L. C. Harbert of J. P. Ratigan Co. outlined the work which had been accomplished by the temporary committee and gave his ideas of the scope of work which should be considered by the export organization. C. Homer Spotts of McEverlast, Inc., presented information relative to the volume of export business being conducted in the southern California area.

In order to obtain the viewpoint of the Americans located in foreign fields who received equipment for use in those fields, L. G. Burt of Tulsa related some of his earlier experiences and brought out the fact that at one time it had been the custom of some American manufacturers to ship obsolete and otherwise unsatisfactory equipment to the foreign fields. He emphasized the importance of eliminating this condition and said that an export association could do much toward bringing about the shipment of only the best goods and in this way increase the good will in foreign countries.

Committee Appointed

Among others who brought out the necessity for concerted action contemplated by this export association was B. A. Cleveland of Regan Forge & Engineering Co. In order to get a more comprehensive expression from the assembly he called on J. S. Mellon of Byron Jackson Co. and W. F. Huff of the National Supply Co. who have had considerable experience in the export field. They offered valuable suggestions for the consideration of the association.

A motion was then made by Mr. Harbert and seconded by E. L. Decker of Martin-Decker Corp. to have a committee appointed for the purpose of completing the details of the organization, the writing of the by-laws and the nomination of officers. This motion was carried unanimously and the following committee was named: W. R. Martin, chairman, L. C. Harbert, T. Sutter, B. A.

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California petroleum equipment manufacturers in attendance at meeting to discuss export association.

Pipe Line Not to Disturb Markets

Gasoline Transportation System of Great Lakes Company Connects Refineries and Market Outlets Already Established. First Unit Operating

By C. O. Willson

KANSAS CITY, Mo., Mar. 27.—The gasoline transportation system of the Great Lakes Pipe Line Co., the first lap of which is now in operation, will not prove a disturbing factor in the gasoline markets of the Middle West and Mid-Continent.

This fact was made clear by interested parties at the annual convention of the Western Petroleum Refiners Association held early in the month at Excelsior Springs, Mo., and is substantiated as the plans for the operation of the line are made known. It is evident that the real purpose in projecting the line to certain consuming points in the Middle West is to largely retain Group 3 markets for Oklahoma and Kansas refineries and to provide a transportation system between refineries and market outlets already established.

The Great Lakes Pipe Line Co. while affiliated with six other companies is operated under its own management as a separate unit. Operating an interstate transportation system, it is governed by the rules of the Interstate Commerce Commission and subject to these regulations, its facilities are available to any seller or buyer of gasoline.

In regard to tariffs, as explained in a previous article appearing in The Oil and Gas Journal,[1] the tariffs from Oklahoma or Kansas refineries to consuming points will be practically the same as the rail tariff between the same points. This rate situation applies whether the movement of the gasoline is by pipe line exclusively or a combination pipe line and rail haul. Thus the refiners who will use the line will have no advantage in delivered costs so far as transportation charges are concerned.

Any savings which accrue to these companies will come in the form of dividends through stock ownership in the pipe line company.

The stock of the Great Lakes Pipe Line Co. at present is owned by the Continental Oil Co., Barnsdall Oil Corp., Mid-Continent Petroleum Corp., Skelly Oil Co., Pure Oil Co. and the Phillips Petroleum Corp. No one company owns a controlling stock interest and all are represented on the Great Lakes company's board of directors.

The desire of these companies to continue the operations of their refineries located in Oklahoma and Kansas was responsible for the formation of the company which is now building the line and which will operate it when completed. All of the companies have large refinery investments in one of the two states served by company owned pipe line facilities connecting to nearby fields. The companies have all or part of their own crude oil supply in these fields.

In the consuming end, the companies concerned sold the bulk of their refinery gasoline output in the middle western states which will be served by the Great Lakes pipe line. This distribution had expanded to the point where the companies were justified in considering the construction of new refineries at points within this consuming territory to be connected by crude oil lines to the Mid-Continent. This would have meant the junking of plants which have operated for years in the Mid-Continent and also a loss in other investments in that territory.

As a substitute for this large loss and new investment in refineries and crude oil lines, the gasoline pipe line system was projected. The advancement made in pipe line construction and operation made this project feasible and actual construction got under way in the late summer and in less than a year from the time started practically the entire line will be completed. It is estimated there will be a saving of one-half of the investment by the gasoline pipe line over the alternative of refineries and crude lines.

Thus, so far as the industry is concerned, the building of a gasoline pipe line bears the same relationship to markets as would a crude oil pipe line. During the past year, two new crude oil pipe line systems have been built connecting Mid-Continent oil fields to refineries as far east as Pennsylvania. Although these lines have a capacity of 100,000 bbls. of crude daily little concern has been expressed as to their effect on markets. Assuming that these lines will ultimately be operated at capacity, this will mean approximately 60,000 bbls. of gasoline daily for the areas served.

This is approximately the combined gasoline capacity of the Great Lakes line and that of the Phillips Pipe Line Co. The latter company is building a line extending from Borger, Tex., to St. Louis, Mo.

Great Lakes Line

As shown in the accompanying map the gathering system and the main and connecting lines of the Great Lakes system west of the Mississippi River are rapidly nearing completion. The main 8-inch line from Barnsdall, Okla., and Kansas City and the 6-inch line from Barnsdall, Okla., to Ponca City, Okla., were completed and have been in operation since the first of the month. Deliveries as needed are now being made at the Kansas City terminal. Rail connections have been made to the terminal and temporary loading facilities are now available. A permanent loading rack is under construction.

It is expected that the 6-inch gathering line from Barnsdall to Okmulgee connecting to West Tulsa and a branch 4-inch line to Muskogee will be completed by April 15. The 85-mile, 4-inch line connecting to Eldorado, Kans., from the main line will also be completed by that date. This will complete the gathering system to refineries for the present.

North of Kansas City, the 8-inch main line to Des Moines is scheduled for completion by April 15. From Des Moines, the 6-inch line to Chicago will be completed as far as the Mississippi River by April 15 and from that point to Chicago by July 1. Negotiations are now being completed for a site at Chicago for the terminal. The terminal will be directly connected to two or three belt line railroads.

North of Des Moines the 6-inch line to the Twin Cities will be ready to operate by May 15 with terminal facilities. A 4-inch line connecting Omaha with the main line at Osceola, Iowa, will be completed about July 1. No final plans for

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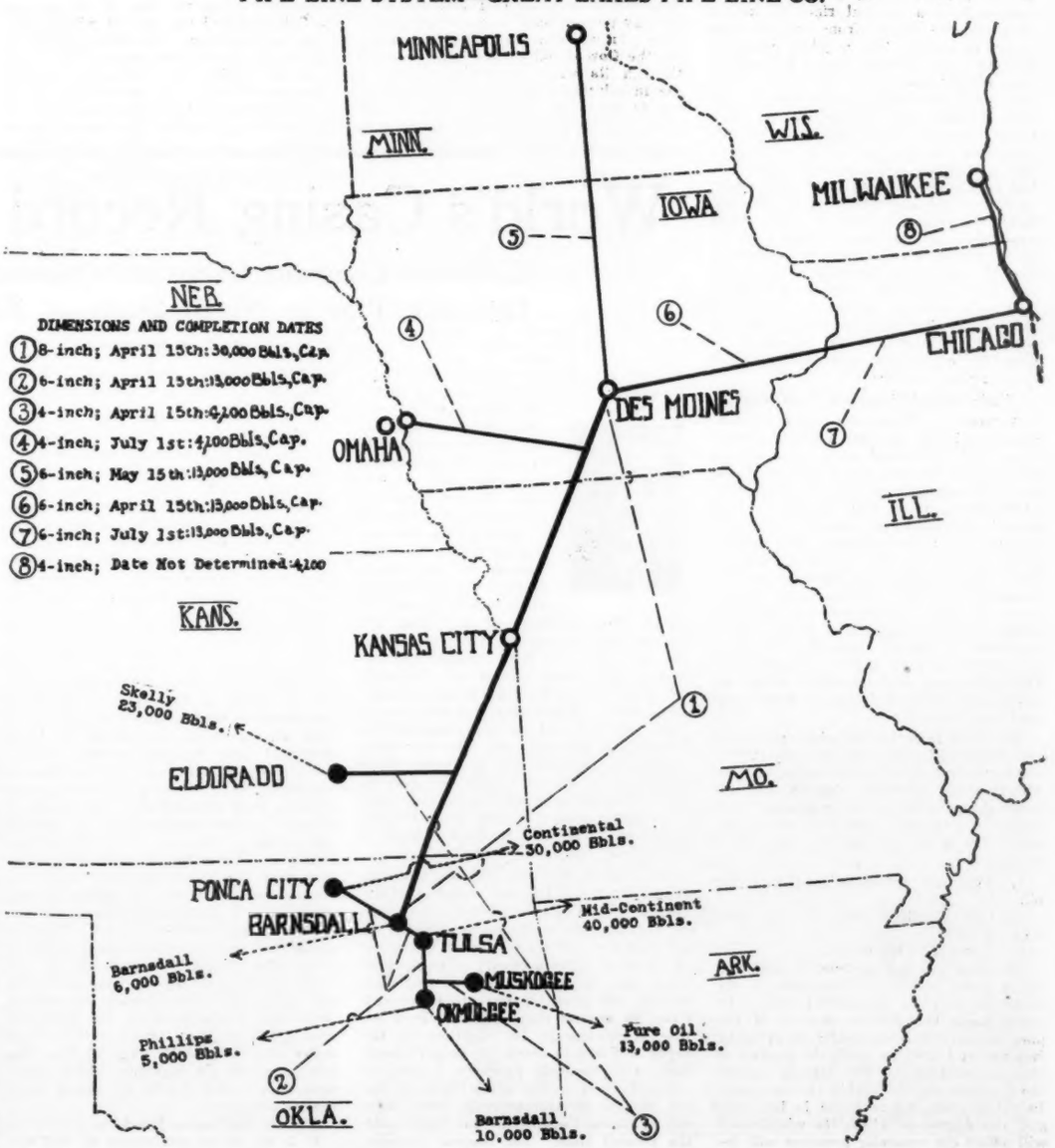
PIPE LINE SYSTEM—GREAT LAKES PIPE LINE CO.



Map showing refinery gathering and distributing system of the Great Lakes Pipe Line Co. Location and capacities of refineries by companies and capacities of main and connecting lines given with dates when operations will start.

[1] February 5, 1931, issue, Page 25.

Better Utilization of Gas Energy Plan

Investigation Shows That Natural Force Impounded in Oil and Gas Reservoirs Can Be Used More Profitably

By J. R. McWilliams
Production Engineer, Skelly Oil Co.*

In their natural state oil and gas are found trapped in porous underground reservoirs and are subjected to certain forces which can be utilized in their exploitation, and the quantity of oil recovered depends pre-eminently upon the efficiency with which these forces are utilized. It is generally conceded that only a small portion, perhaps 20 per cent, of the oil in an underground reservoir is recovered, but the gas recovery might be estimated at 90 per cent. The outstanding problem confronting the oil and gas producer is to increase the percentage of oil recovery by controlling well operations in order that energy contained in the compressed gas while underground can be better utilized and the fuel value of the gas not wasted after it has arrived at the surface.

Many factors enter into the problem of efficiently developing and operating an oil and gas pool, and further complication is added by the fact that the various owners have a coequal right to take a proportionate share from the common source of supply. The problem is simplified to a considerable extent by unitization which permits one operator to put into effect developing and operating policies decided upon by the owners as a whole, thereby permitting wasteful and uneconomical practices to be minimized. But this paper will deal with the problem as it exists in those pools where unitization is not susceptible of accomplishment, the subject matter, however, being applicable to unitization with certain modifications. Furthermore, it is assumed that the maximum quantity of oil which can be economically recovered from a pool as a whole is mandatory upon its owners and that their developing and operating practices can be regulated to whatever extent the accomplishment of this purpose requires.

Underground Reservoir Conditions

A reservoir of porous formations containing oil and gas has definite dimensions and is charged with an unknown but specific amount of oil and gas under a certain pressure, which is undoubtedly hydrostatic. It is this pressure which directly or indirectly causes these substances to move through the porous stratum when a well is drilled into it. The amount of pressure upon the gas determines how much porous space it originally occupies, but the pressure has little effect upon the amount of porous space occupied by the oil since it is a liquid and therefore only slightly compressible. Obviously, any withdrawal of either oil or gas will cause a decline in this reservoir pressure.

There are three factors which primarily contribute either directly or indirectly to the movement of oil to the wells, and the effectiveness of these factors depends upon the existing reservoir pressure and those underground physical conditions which retard the movement of oil. These factors are:

1. Free gas not associated with the oil.
2. Gas dissolved in and associated with the oil.
3. Natural water drive.

The free gas not associated with the oil is quite mobile and therefore easily finds its way to the drilled wells. In many pools the greater portion of the porous reservoir is originally occupied by free gas and in those pools the control of free gas withdrawal will largely control the pressure decline within the reservoir. In other pools where there is less free gas, the degree to which its withdrawal will affect the reservoir pressure will depend upon the actual volume of free gas withdrawn compared to the combined actual volume of oil and dissolved and associated gas withdrawn. In any case, controlling the rate of gas withdrawal, whether that gas existed in the reservoir as free gas or dissolved in or associated with the oil, will primarily fix the rate of pressure decline in the reservoir unless hydrostatic pressure is predominately effective, in which case the rate will be retarded. Therefore, the conclusion is drawn that equitably controlling the volume of gas withdrawn from each well in a pool will control its mean rate of pressure decline and that the mean rate of pressure decline will be further arrested to whatever extent water encroachment takes place.

In an oil and gas reservoir during its early life the principal source of inherent energy that moves oil is the expansion of the compressed gas dissolved in or associated with the oil and the amount of gas dissolved in or associated with the oil is directly proportional to the existing pressure. In addition to furnishing energy for the flow of oil to the well, pressure, through its effect upon the amount of gas in solution with the oil, imparts desirable physical properties for its efficient migration. A pressure differential between a well and the formation permits the compressed gas dissolved in or associated with the oil to expand, and the increment of increased gas volume travels toward the well forcing some of the oil to travel with it. However, the viscosity of the oil has been increased by a decrease in gas in solution so the rate of expanding gas travel should be that at which the less mobile oil can travel, or in other words, the oil should move at such a rate that, upon reaching the well, the gas-oil ratio represents as nearly as possible the amount of gas dissolved in or associated with the oil at the existing reservoir pressure. It, therefore, seems quite obvious that the decline in reservoir pressure should be uniform and slow in order to allow sufficient time for the maximum amount of oil to arrive at the wells.

Hydrostatic Pressure

Hydrostatic pressure will tend to decrease the decline in reservoir pressure depending upon the rate of oil and gas withdrawal and the rate at which water can replace them. Hydrostatic pressure can be quite effective not only in arresting the decline in reservoir pressure, thereby affecting the usefulness of the gas dissolved in and associated with the oil, but in also affecting a natural water drive, but in either case its effect upon the production of oil is beneficial or destructive depending upon the rate of pressure decline in each well in particular and in the reservoir in general. The beneficial or destructive effects of hydrostatic pressure are becoming more evident in the deeper producing fields because of the increased pressure at those depths and it must more generally be taken into account as a factor determining the percentage of oil recovery lest its destructive effects be more pronounced.

The statement that the rate and uniformity of decline in reservoir pressure determines in a large measure the percentage of oil recovery from a pool is to a certain extent substantiated by the fact that the oil production from a well follows closely the decline in formation pressure. It is also a fact that a well's decline in pressure follows closely its decline in gas production so the conclusion is drawn that the rate of gas withdrawal by fixing either directly or indirectly the rate of decline in reservoir pressure fixes the percentage of oil extraction. It is also believed that this statement is true with reference to those pools where natural water drive predominates, because

(Continued on Page 126)

*Before Mid-Continent district, American Petroleum Institute, Division of Production, March 27, 1931.

World's Casing Record Established

California Company Lands and Cements 6,763 Feet of 13⅜-inch Pipe in North Dome of Kettleman Hills

By L. P. Stockman

LOS ANGELES, Calif., Mar. 28.—Progressive deep drilling resulted in the establishment of another new world's record this week when the North American Oil Consolidated successfully landed and cemented 6,763 feet of 13⅜-inch 68-pound casing in No. 1 Blauvelt, located in the North Dome of Kettleman Hills in SE, Section 36-21-17. No difficulty of any kind was experienced in landing this pipe despite the fact that the dead weight, approximately 217 tons, placed an unusually heavy strain on the rig and other equipment used. This long string was run in and cemented and the job completed in 18 hours and 35 minutes. The only extra equipment required was a special pump which was used to handle the cement. It required 35 minutes to mix and pump the cement into the hole and another hour and 30 minutes to force it back of the casing.

The 6,763 feet of 13⅜-inch casing landed in No. 1 Blauvelt constitutes the longest string of this size pipe ever run in a California well and is believed to have set a record for the world in general to shoot at. The necessity of using such large pipe is due to the fact that this project will probably have to be carried down to around the 9,000-foot level before completions. In addition to the depth required to reach the deep Ochsner zone, the Blauvelt property is located rather far out on the north flank so that the well is stratigraphically lower than any producer finished in that field up to the present time. The deepest commercial producer in California at the present time is the Superior Oil Co.'s No. 1 Huffman in the North Dome at Kettleman Hills. This well is flowing 10,500 bbls. per day from a depth of 8,327 feet.

Using Larger Pipe

There has been a noticeable tendency on the part of California operators during the past several years to use pipe of large diameters. This has been found advisable because of progressive deep drilling and the clock-like regularity with which new deeper productive horizons have been encountered. It is obvious that wells finished with large pipe can be deepened to advantage and afford the owner the advantage of several weeks' drilling time in the event that a new deep zone is discovered subsequent to original completion. The projected town lot drilling campaign in the Huntington Beach Field of Los Angeles Basin is analogous to such a situation and operators having wells susceptible of being deepened have already started preliminary preparations to redrill and deepen producing wells to the new zone believed to have been discovered by the Superior Oil Co. a few months ago. Deepening operations in this area have not yet got under way on a broad scale due to the fact that the Superior's deep zone discovery was shut in subsequent to the conclusion of drilling operations without producing any commercial oil. The Superior and several other operators, however, have jumped the gun and are already drilling ahead in projected deep zone producers. From present indications deep zone exploitation in the town lot area at Huntington Beach will be well under way within the next 30 days unless operators get together, which seems improbable, and decide to retard deep zone development.

California Practices

It is not at all uncommon to find operators using long strings of 6⅝-inch casing during the course of work in California but it is quite unusual to find anything over 9-inch landed below 6,000 feet. It is common practice for operators in the North Dome of Kettleman Hills to start off with 20-inch and then taper off the diameter of pipe according to the location of the well structurally and the depth to which the drill will have to be carried before completion. The Union Oil Co. for instance landed the 13⅜-inch string in its No. 1 Amerada King at 5,535 feet, while the Standard Oil Co. went a little deeper in its No. 34 in Section 29-21-17 and set at 6,001 feet. Some operators in the North Dome choose to start off with 16-inch instead of 20-inch but regardless of what size is selected the first cement job is done around the 1,500-1,600 foot level. In the Dominguez Field of Los Angeles Basin, the Shell Oil Co. landed a string of 13⅜-inch casing in its No. 7 Manuel at 5,489 feet for protective purposes and then continued drilling down to 8,922 feet before work was temporarily suspended a few weeks ago.

The Associated Oil Co. is believed to hold the best record for strings of 11¾-inch pipe, its deepest job being the landing of 6,280 feet of this size casing in No. 10 Ventura Land & Water lease in the Ventura Avenue Field. The Continental Oil Co. leads the list with 9⅝-inch casing as its No. 24 Selover, a deep well in the Seal Beach Field of Los Angeles, is down 8,823 feet with a string of 9⅝-inch casing landed and cemented at 6,095 feet. The Standard Oil Co. used a string of 9-inch casing in its No. 1 Mascot, a deep well in the Midway-Sunset Field of Kern County. This well, which was carried down to 9,629 feet before being suspended pending further developments, has four strings of pipe. It has 600 feet of 16-inch 70-pound casing, 996 feet of 13⅜-inch 68-pound, 6,350 feet of 9-inch 45-pound and 9,302 feet of 5¾-

(Continued on Page 121)

Oil Men Asked to Save Drake Well Site

Leaders in Petroleum Industry Launch Movement to Protect Historic Spot and Establish State-Maintained Park

By Thomas F. Smiley

Twelve inches of old 5-inch casing protruding from the surface of Watson's Flats on the bank of Oil Creek, near Titusville, Pa., marks the place where on August 27, 1859, the oil industry was born. Precisely at that spot the world's first oil men carried through to completion in spite of banter, ridicule and financial worry an experiment which was to revolutionize man's way of living and doing things; which was to cause towering derricks to sprout from farm, woods and sandy desert, breaking their quiet with the clank of machinery and smearing the landscape with grease; which was to build cities and dot the seas with ships; which, with crazy disregard for logic and copybook maxims, was to create millionaires by the hundreds.

The original oil men? Well, omitting extra workmen and the promoters who provided, or set out to provide, the money needed for the venture, the roster would include:

Col. Edwin L. Drake, who directed operations and kept on fighting when the skies were black.

William A. (Uncle Billy) Smith, blacksmith, who made the tools required and acted as assistant to Colonel Drake.

James, William and Samuel B. Smith, Uncle Billy's sons, who helped their father with the drilling.

To young Sam Smith fell the distinction of being first to catch sight of the dark liquid with its greenish-gold bubbles glistening in the well hole. He was like Columbus' sailor who, according to the school history of boyhood days, sang out "Land!" For Sam, peering down into the pipe on Watson's Flats, saw something that made him gulp and then, turning to his dad nearby, yell, "Oil!"

Sam was 16 then. Colonel Drake and Uncle Billy passed on many years ago to rewards that neither was accorded in a material way on earth. James and William Smith, too, are dead, but Sam, vigorous of mind and body at 88, is a familiar figure in the streets of Titusville, his home, which oil transformed from a little lumber village into a busy city.

Prompt Action Imperative

Floods and ice gorges, which have done their destructive work for years, threaten to efface all that remains of the world's most famous oil well. Prompt action is imperative if the Drake well site, with its memories of a wonderful adventure, is to be saved from obliteration.

Public-spirited men, with the co-operation of the American Petroleum Institute, have started a movement designed to preserve this historic spot from further damage and to give every interested person in the country an opportunity to have a part in the enterprise. It is planned to do needed protective work, acquire enough land around the well site to form a park, and provide for proper maintenance through state appropriations.

Plans for the project are in the hands of a committee appointed by the board of directors of the American Petroleum Institute, consisting of W. R. Boyd, Jr., executive vice president of the Institute, chairman; Charles L. Suhr, president and general manager of the Pennzoil Co.; W. M. Irish, president of the Atlantic Refining Co.; L. M. Young, president of the South Penn Oil Co.; and Christy Payne, head of the Standard Oil Co. (New Jersey) natural gas interests.

The program formulated by this committee comprehends not only rehabilitation of the well site, with a setting that will make it a beauty spot besides heightening its historic interest, but provision for permanent upkeep. It is planned through action of the Pennsylvania legislature to have a state commission take title to the land as a historical park and to obtain annual appropriations for maintenance. It is planned also to have highway improvements made that will make the park accessible at all times. Impassable roads and washed-out culvert bridges now virtually prohibit approach a large part of each year.

Following a survey and report by B. B. Weber, city engineer of Oil City, Pa. It is estimated that $60,000 is needed to build a retaining wall; clean, excavate and drain; perform landscaping; construct park roadways, and erect a caretaker's cottage with a room in it for relics and records relating to the Drake well or to other early petroleum history. It is proposed to raise this fund by subscription.

Names of Donors to Be Preserved

All contributions will be acknowledged and the names of all contributors are to be enrolled in a book for permanent record. It is planned to keep this book in the museum room of the park.

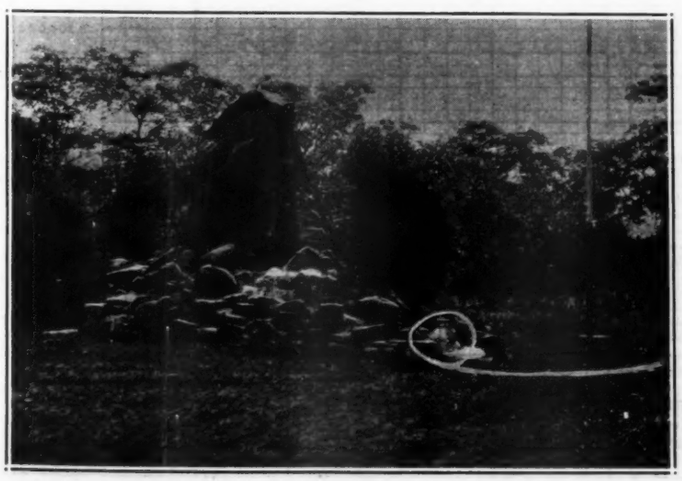
Certain citizens of the Oil Creek region who through the local chapter of the Daughters of the American Revolution and by personal effort have saved the well site from destruction by floods up to the present time will acquire and donate the additional land and easements for the protective work and the park site. These citizens have co-operated with the American Petroleum Institute in the selection of three trustees who are to supervise construction work until it is completed and title to the property has been turned over to the State. The trustees, all widely known in the oil industry, are S. Y. Ramage, of Oil City, Pa.; Hon. A. R. Wheeler, of Endeavor, Pa., a member of the Pennsylvania legislature, and James H. Caldwell, of Titusville.

Mr. Boyd's committee is to safeguard all money subscribed for the fund and disburse it for the requirements of the trustees.

The program now under way for preservation of the Drake well site and relics relating to it promises to perform in an adequate way a task with which individuals and small groups of interested persons have struggled at different times. An ambitious effort was made by the late Edwin C. Bell, who as a young man worked as an oil well driller and pumper around Titusville. In his later years he devoted much time to the collection of relics connected with early oil history and he acquired many objects of historic interest relating to the Drake well. Largely through Mr. Bell's labors

(Continued on Page 121)

This old picture of the Drake well shows Uncle Billy Smith sitting on a wheelbarrow in the foreground. Two of his sons, James and William Smith, are standing at the sides of the pump-house door. Back of James, sitting on a board, are his two young sisters. Elbridge Lock, of Titusville, stands at William Smith's right. A brother of Uncle Billy leans against a plank at a corner of the derrick.



The boulder monument erected by the Daughters of the American Revolution. Inside the white circle is the casing projecting from the old Drake well hole.

This view of the boulder monument and the clearing about the Drake well site shows the natural beauty of the setting for the projected Drake Well Memorial Park.

Chemists See Flame Travel Picture

Progress of Research in All Phases of Refining Presented at Semiannual Meeting of Society

By W. T. Ziegenhain

INDIANAPOLIS, Ind., Apr. 1.—The petroleum division of the American Chemical Society closed its two-day meeting here at noon today and during this time 21 papers were presented on subjects of immediate interest to refiners and natural gasoline manufacturers.

These included a photographic study of motor performance with respect to its tendency to knock. This was made possible by use of a special quartz window installed in the head of a motor. Through its use the speed of the flame and the intensity of the light were shown.

The growing interest in special processes for the manufacture of lubricating oils was also shown in the discussion which followed the reading of two papers. One of these outlined results obtained in the use of various solvents for the separation of paraffinic and naphthenic lubricating oil fractions from the same crude. The other paper correlated the properties of the individual hydrocarbons identified in various lubricating oils with the performance of the lubricating oil itself. Further studies in connection with the crystallization of wax and the practical application of photomicrographic studies were of singular interest. The discussion of the subject was enlarged by the presentation of X-ray diffraction studies as outlined in another paper.

As in previous meetings of the society, considerable discussion developed following the presentation of a progress report on work being done at the University of Minnesota in which the simpler hydrocarbon gases are being condensed to form a wide range of liquid products through the use of an electrical discharge.

Numerous other subjects of interest and practical application were presented for discussion. There included a method of measuring sunlight intensity in connection with the photo-chemical changes that take place in gasoline when it goes off color in the sunlight. Another paper explained a short-cut method for the analysis of gaseous hydrocarbons while another described a new method for determining the water content of gasoline.

A paper of interest to refiners manufacturing gas oil for sale to artificial gas manufacturers was presented in which the value of the oil as an enriching agent was correlated with certain physical tests made on the oil in the laboratory. Valuable information was also contained in the progress reports on the various research projects instituted under the guidance of the A.P.I. research program.

Flame Studies

After describing the photographic flame studies referred to above, Lloyd Withrow and T. A. Boyd of the General Motors Corp. summarized their conclusions as follows:

"The detonation phenomenon which heretofore has been recognized in the gasoline engine by its sound and by the characteristic shapes of the pressure records is due to a many-fold increase in the rate of inflamation within the latter portion of the charge. In other words just at the time that detonation begins there is a many-fold increase in the amount of charge beginning to burn, with the emission of light, per unit time. During the course of the present work, this characteristic of detonation has been observed in hundreds of detonating explosions in the engine both photographically and visually. The flame records indicated that a narrow combustion zone within which the combustion reaction completed itself, moved across the combustion chamber. For the sake of clarity it might be well to state at this point that we mean by the combustion zone that region in which oxidation of the hydrocarbons in the fuel takes place, and we do not include the reactions of the products of combustion which are brought about by changes of temperature and pressure. The combustion zones are quite distinct upon the negatives of the flame records. They were still more pronounced when the flames were observed in the engine by visual means because the combustion zone was of a greenish blue color and the afterglow was of a bluish white or a reddish yellow color depending upon the mixture ratio. These records, then, indicate that a combustion zone passes through every portion of the charge and that the products of combustion continue to glow for some time afterwards.

"It is believed that the shape of the flame front is convex to the direction of the flame travel as it moves away from

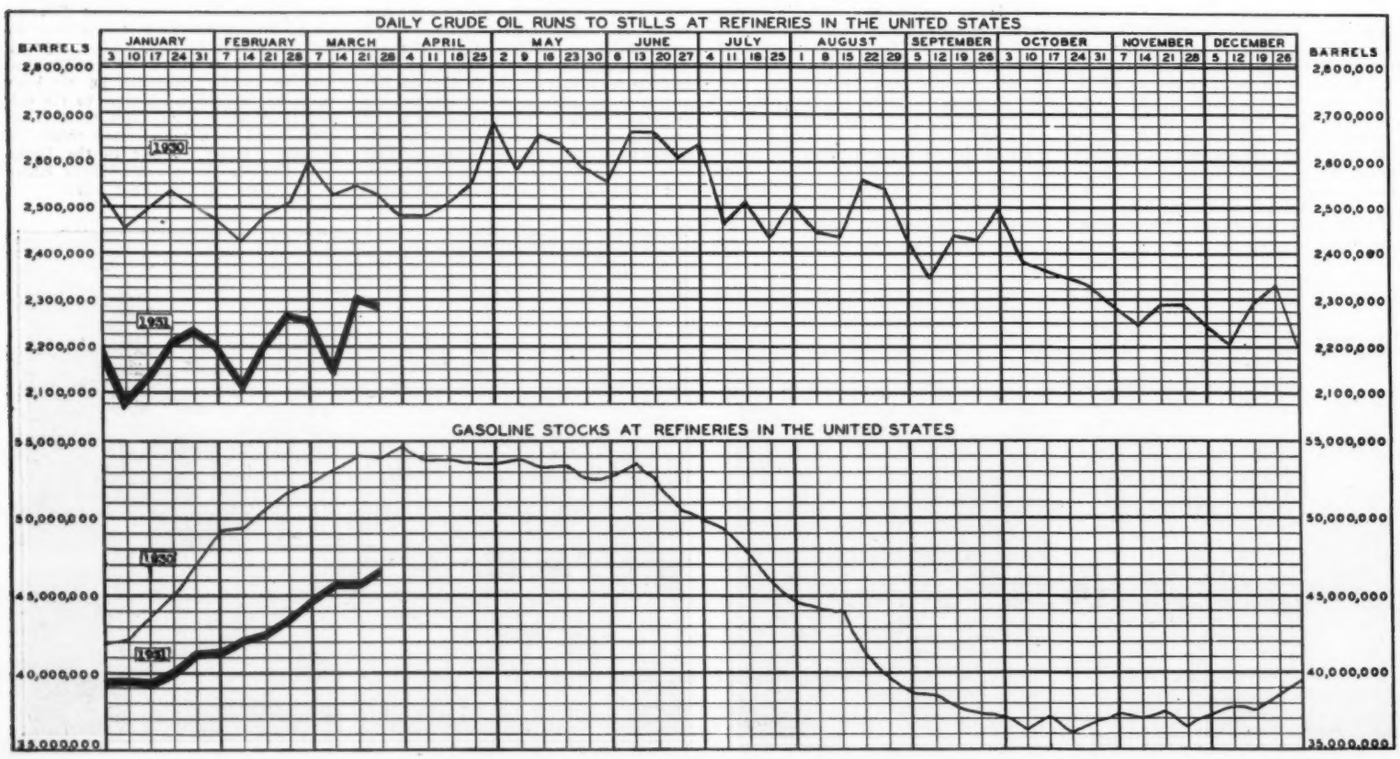
(Continued on Page 127)

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending March 28.

	Week ending March 28, 1931				Week ending March 21, 1931				Week ending April 2, 1930			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	476,400	8,690,000	7,244,000	100.0	459,400	8,689,000	7,180,000	100.0	445,829	9,550,000	6,314,000
Appalachian	93.8	92,400	1,766,000	1,107,000	93.8	94,000	1,662,000	1,163,000	91.0	91,986	1,865,000	668,000
Indiana, Illinois, Kentucky	97.5	297,000	5,743,000	3,082,000	97.5	303,200	5,616,000	3,066,000	99.5	327,871	8,479,000	3,056,000
Oklahoma, Kansas, Missouri	89.4	257,900	3,468,000	3,727,000	89.4	250,100	3,473,000	3,547,000	89.1	313,600	4,700,000	3,622,000
Texas	91.9	548,400	8,088,000	8,096,000	91.9	536,300	7,767,000	8,178,000	90.4	557,357	8,153,000	11,072,000
Louisiana and Arkansas	98.3	148,100	1,994,000	2,254,000	98.3	145,000	1,913,000	2,372,000	96.8	163,100	2,553,000	2,008,000
Rocky Mountain	93.1	48,600	1,893,000	829,000	93.1	48,000	1,874,000	838,000	93.5	54,928	3,049,000	1,959,000
California	98.8	461,300	15,802,000	100,929,000	98.8	461,000	15,764,000	101,347,000	99.3	536,186	16,330,000	108,387,000
Total United States	95.7	2,332,400	47,444,000	127,268,000	95.7	2,297,000	46,758,000	127,691,000	95.6	2,490,786	54,739,000	136,186,000
Texas Gulf Coast	100.0	417,300	6,950,000	5,791,000	100.0	400,000	6,580,000	5,923,000	99.4	427,414	7,076,000	8,490,000
Louisiana Gulf Coast	100.0	100,900	1,805,000	1,213,000	100.0	97,000	1,719,000	1,330,000	100.0	107,386	2,207,000	1,174,000

(1) Per cent of refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



Data for 1930 based on weekly reports of the American Petroleum Institute. Data for 1929 derived from monthly reports of the Bureau of Mines, Department of Commerce. Figures for last week not shown in graph but are included in above tables.

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WHAT NEXT?

The oil industry has been stood on its head so often by revolutionary changes in its operations that it ought to be immune to surprise. But the latest crude price changes announced by the Union Oil Company of California had it guessing until the explanatory statement of Executive Vice President R. D. Matthews was digested.

The initial announcement showing higher prices for low gravity crudes than for higher gravity was at first interpreted as a mistake in transmission so contrary was it to all experience, but Mr. Matthews' statement soon disposed of that assumption.

The new schedule, he said, is based on values obtainable from different grades of crude under existing marketing conditions.

"Low gravity crude, fuel and gas oils now carry greater economic values in comparison with higher gravity or gasoline crudes, in as much as present prices for gasoline, after deducting state taxes, will not pay for the cost of raw material for gasoline and the manufacturing and distribution costs of the product."

It naturally follows, he added, that values of higher gravity grades of crude decrease in proportion to the increase in gasoline content.

Startling though this declaration may seem to those who have not kept in mind the development in antiknock motor fuel it is simply a reflection of the fact that the lower gravity crudes give greater cracking stocks and these cracking stocks give a better grade of gasoline from an antiknock standpoint.

It also, of course, reflects the present condition in which the refiner has allowed his gasoline market to get away from him to the point where there is a parity of prices between the two products —fuel oil and gasoline.

With gasoline on a fuel oil basis there is little humor in the idea of gasoline perhaps being sold by the barrel and fuel oil by the gallon.

Fuel oil has competed with cheap coal, but has not gone down as much as gasoline which competes only with itself, an incongruous situation. Fuel oil has, in large measure, been able to keep its prices in line while gasoline, through overproduction, has been allowed to drop to the bottom.

It is this situation that has forced the readjustment of the crude price structure on an entirely different basis, at least temporarily.

The fact that gasoline can be readily distilled out of crude of certain characteristics is no longer a dominant factor from a crude price standpoint. Due to the trend towards knock rating of motor fuel the old basis of comparison between crudes is being changed and this is not temporary.

The possibility of such a setup becoming permanent must be recognized.

Lots of people within the industry, particularly crude oil producers, have not appreciated and do not appreciate the important changes that have been under way the past three or four years.

Whereas in the past gasoline was graded largely by volatility and chemical purity there has been added another property based on the chemical constituents of the product.

The fact that motor fuel has the required distillation range and that it is free from foreign matter and chemical impurities is not sufficient.

It has got to have other properties which give superior performance in the new type of automobile and does not knock.

In general, paraffinic or mixed base crudes of high gravity were formerly considered the most desirable in the manufacture of gasoline, but they are now the least desirable. Certain California crudes produce higher antiknock motor fuel, either cracked or straightrun, than mixed base crudes.

The price of the raw material of gasoline may be determined by the residual oil that was formerly considered in the light of a waste material or on a par with cheap coal.

This illustrates the change in market conditions and manufacturing operations which in the present instance gives low gravity crude a higher rating than the crude with greater gasoline content.

Much more emphasis is being placed on the cracking of residual oil to obtain the grade of product required by the market. High gravity mixed base crude, once regarded as the premium raw material, is now less valuable from this viewpoint than the low gravity oils of naphthenic or asphaltic base which furnish a larger yield of cracking stock.

Although the higher gravity crude may be relatively easy to refine in a skimming operation it is no secret in the refining trade that many of the large units prefer to purchase other types of crude. Cases are cited where major refiners reduced their purchases of certain crudes because of the relatively low antiknock rating of the gasoline secured through the skimming operation.

This crude, in some instances, gives yields as high as 55 per cent gasoline from simple distillation at atmospheric pressure but the motor fuel secured is below the standard established by these companies for their ordinary grades of gasoline and the refiners must blend it with other gasolines of high antiknock rating in order to sell it.

In brief, all this merely means that gravity as a basis for crude oil value is rapidly losing its significance. Certain authorities familiar with the situation believe indeed that in the near future gravity will be entirely disregarded in the bulk of refining purchases and crude values will be based on a careful analysis which will show not only the physical yield of refined products but the chemical components of the product so far as motor fuel is concerned.

There is but one step necessary to bring this about. That is a standard method to be generally accepted for testing the knocking properties in gasoline. It is believed that this standard test will be available by the end of the year.

Despite the readjustment this involves or may yet mean in the crude and refined markets it is not without its constructive feature by placing more and more stress on the properties of motor fuel which will tend to minimize the market influence of the small skimming plant so often built in flush fields and whose products indiscriminately marketed have resulted in general lowering of the markets of the industry.

The new yardstick for measuring the properties of gasoline will set up a specification which these plants will not be able to meet, thus removing one of the most damaging of the industry's troubles.

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Gasolines From West Texas Crude Oils

Motor Fuels Secured in Skimming and Cracking Operations Relatively High in Antiknock Rating. Representative Results Given

By Gustav Egloff, E. F. Nelson and Paul Truesdell
Universal Oil Products Co.

All the crudes from the Permian Basin in Texas, except those from the Hendricks and Yates Pools which are naphthenic, have an intermediate or mixed base. Sulphur occurs in the West Texas crudes in three principal forms; as hydrogen sulphide in large amount; as elemental sulphur; and as small amounts of organic sulphur compounds, such as mercaptans, sulphides, disulphides, and others of unknown constitution. Three representative crudes show sulphur contents in the crude and in the untreated 410° F. endpoint gasoline as follows:[1]

TESTS ON THREE CRUDES AND PRODUCTS

Crude—	Gr.	% S in crude	% yield gasoline	% S in untreated gasoline
Crane-Upton	28	2.0	30	0.16
Winkler	29	1.50-1.75	20-25	.20-.23
Pecos	30	1.25-1.75	20-25	.18-.20

The gasolines from these high sulphur crudes requires careful treating to bring them within specifications without destroying their antiknock quality.

The principal West Texas fields besides Yates, in Pecos County, are the Westbrook Field in Mitchell County, the Big Lake Field in Reagan County, the Settles-Chalk Pool in Howard County, Church and Fields, McElroy, and McCamey Fields in Crane and Upton Counties, Hendricks Pool in Winkler County, and the World Pool in Crockett County. There are scattered pools of more or less production in several other counties.

FIFTH OF SERIES

The accompanying article is the fifth of a series describing results obtained in skimming and cracking operations with representative crude oils.

The following oils were described in previous issues:

March 5—Oklahoma City, Okla.

February 19—Refugio, Tex.

February 12—Pennsylvania grade crude.

The sixth of the series will be concerned with additional types of Mid-Continent crudes. Each article contains a complete discussion of a particular type of crude oil.

Yates Oil Pool

Yates Field is the shallowest in the World, producing oil in huge quantities from about 1,000-foot depth.

Crude from the Pecos County Field analyzed as follows:

YATES POOL (PECOS COUNTY) TEXAS CRUDE

Properties of Crude

Gravity	29.6
B.s. and water	None
Pour test °F.	0°
Saybolt vis. @ 100°F. (sec.)	60"
Sulphur, per cent	1.55

Products and Yields

Gasoline:	
Per cent of crude	24
Gravity °A.P.I.	54.8
Initial boiling point °F.	140
A.S.T.M. (100 cc. Distillation)	
Per cent distilled over	°F.
20	226
50	276
90	358
Endpoint	435
Kerosene:	
Per cent of crude	6.20
Gravity °A.P.I.	39.7
Flash °F.	150
Fire °F.	180
Gas oil:	
Per cent of crude	28.20
Gravity °A.P.I.	31.8
Flash °F.	200
Fire °F.	225

Lub oils:	150 vis.	500 vis.	Hy. vis.
Per cent of crude	2.20	18.70	16.00
Gravity °A.P.I.	23.5	22.4	.....
Flash °F.	360	420	570
Fire °F.	430	480	675
Viscosity	150	500	.....
Pour °F.	0	0	.....
Color	2	3	Black

Loss, including treating losses—4.70 per cent

Skimming Operation of Pecos Crude

Gasoline:	
Per cent of crude	24.0
Gravity °A.P.I.	54.8
Sulphur, per cent	0.30
Initial boiling point °F.	140
Per cent distilled over	°F.
20	226
50	276
90	358
Endpoint	435
Kerosene:	
Per cent of crude	6.20
Gravity °A.P.I.	39.7
Flash °F.	150
Fire °F.	180
Sulphur, per cent	0.58
Fuel oil:	
Per cent of crude	65
Gravity °A.P.I.	21.2
Flash °F.	240
Fire °F.	285
Pour °F.	0
Sulphur, per cent	1.95
Loss:	
Per cent of crude	1.80

According to Sidney Born,[2] sulphur in this crude shows the following distribution:

	Per cent
Total S	1.55
H_2S	0.026
Elemental	0.025
Mercaptans, etc.	0.052

Sulphur in untreated naphtha was calculated as follows:

Sulphur—	Per cent
H_2S	0.003
Elemental S	0.012
Mercaptans	0.044
Disulphides	0.032
Sulphides	0.082
Residual	0.049
Total	0.222

This high sulphur crude can produce satisfactory lubricating oils as well as superior motor fuels, according to Doctor Born. He also reports that the best treatment of the naphtha from this high sulphur crude consists of a preliminary wash with 3 per cent of 25° Be. caustic soda, then 5 per cent by volume of 18° Be. doctor solution (1 pound litharge per barrel of naphtha treated). The use of 0.2 pound of sulphur per barrel to bring down the doctor solution completes the reaction.

In this field oil is produced from several different levels. The "shallow zone" produces from approximately 2,450 feet. The Texon sand is the most prolific and extends from 2,845 to 3,137 feet. The discovery well reached a depth of 3,028 feet. A third horizon, which consists of a sand 15 feet thick, is found in the Pennsylvania stratum, at 6,284 feet, and yields a sulphur-free oil which differs from the rest of the West Texas oils. One well drilled to a depth of 8,633 feet is the deepest in the world and produces an oil which, according to Slagter,[3] corresponds in all its characteristics to a light Pennsylvania crude.

The gravity and boiling points would indicate this to be a Pennsylvania oil, but the percentage of gasoline is very high. It is a paraffin base oil containing only 0.35 per cent paraffin wax, and 5 per cent lubricating oils. It is wholly free from asphalt. A commercial run to 7 per cent residual oil showed the following results, the gasoline showing .075 per cent sulphur. The flashpoint of the lub distillate was 470° F. and the fire 520° F.

TESTS ON PRODUCTS

	Gr.	Per cent crude	Color
Gasoline (425 e.p.)	63.5	66.0	25
Kerosene (180 Fl.)	43.5	20.0	..
Gas oil	38.0	5.65	..
Lub oil (350 vis.)	29.5	4.50	6.7
Wax (124-6 MP)	...	.35	..
Loss	...	3.50	..

The oil from the third zone (6,284 feet) is of 38.7° A.P.I. gravity and contains 35 per cent gasoline and no sulphur. The first and second zones yield typical West Texas high sulphur crudes.

The first or shallow zone oil contains slightly less sulphur than that from the Texon level. Oil from the shallow horizon has a gravity of 36.9° A.P.I., and distills to 32.5 per cent gasoline, 12.5 per cent kerosene and 55 per cent bottoms.

Texas crude, from the second and most prolific level, analyzes as follows:

TEXON CRUDE OIL

A.P.I. gravity	38.2
Sulphur, per cent	0.26
Water, per cent	Nil.
Pourpoint °F.	Below 5
Vis. (Saybolt Univ. at 70° F.) secs.	47
Vis. (Saybolt Univ. at 100° F.) secs.	41
Color	Green

Atmospheric Hempel Distillation

°F. fraction	% cut	Gravity A.P.I.
To 122	2.1	80.3
122-167	2.3	
167-212	5.5	69.2
212-257	7.4	60.2
257-302	6.3	55.2
302-347	4.5	50.1
347-392	4.7	46.5
392-437	4.5	43.0
437-482	5.3	40.0
482-527	5.0	38.0

Hempel Vacuum Distillation

°F. fraction	% cut	Gravity A.P.I.	Vis. at 100° F.
To 392	5.1	34.0	41 secs.
392-437	5.8	32.8	48 secs.
437-482	5.1	31.1	66 secs.
482-527	4.1	28.2	105 secs.
527-573	6.1	26.3	200 secs.
			Per cent
Residuum			24
Distillation loss			1.3

SUMMARY OF TESTS WHEN RUNNING TEXON CRUDE

	% of crude	Gravity	Vis.
Light gaso.	9.9	73.9	....
Total gaso. and naphtha	32.8	59.5	....
Kerosene	9.8	41.3	....
Gas oil	13.7	35.2	....
Nonvis.	8.8	32.7–28.6	50–100
Med. dist.	5.7	28.6–26.3	100–200
Vis. dist.	3.0	26.3–25.0	200+
Resid.	24.9	19.0	....
Loss	1.3	....	....

(Continued on Page 136)

ENDPOINT CRACKED GASOLINE FROM WEST TEXAS KEROSENE DISTILLATE

			Color: Before exposure	Color: After exposure to sunlight	Sulphur per cent	Gums mgs. per 100 cc. gasoline	Antiknock: Per cent Benzol equivalent	Antiknock: Per cent Octane No.	Distillation: I.B.P. °F.	10%	20%	50%	90%	E.P. °F.
Endpoint gasoline (analyses)	A	4-lb. acid treat	30	27	Less than 0.10	125	68	85	108	152	180	251	338	377
		6-lb. acid treat	30	30	Less than 0.10	52	68	85	102	144	176	250	335	372
		8-lb. acid treat	29	25	Less than 0.10	18	67	84	117	167	194	261	349	380
	B	30% overhead	30	30	Less than 0.10	3	73	91	84	98	102	140	218	242
		40% overhead	30	30	Less than 0.10	4	72	90	88	112	126	163	272	298
		Bottoms of 40% overhead treated with 8 lbs. of acid	30	30	0.05	303	67	84	200	241	252	282	333	379
		Blend of 40% overhead and naphtha from treated bottoms	30	30	0.07	7	69	86	93	139	170	239	320	358
		50% overhead	28	28	Less than 0.10	18	71	89	92	118	133	176	256	320

A = Treating distillate as a whole.
B = Treating distillate corresponding to secondary tower operations.

[1] Hewetson, The Oil and Gas Journal, p. 118 (December 6, 1928).

[2] The Oil and Gas Journal, p. 224 (December 6, 1928).

[3] See Hennen, Structure of Typical American Oil Fields, Vol. 2 (1929), p. 538.

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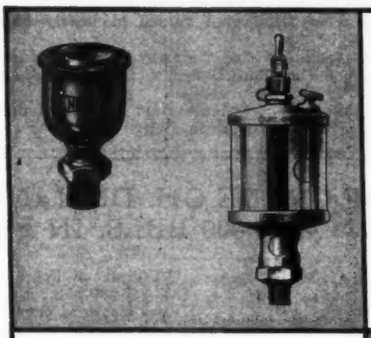

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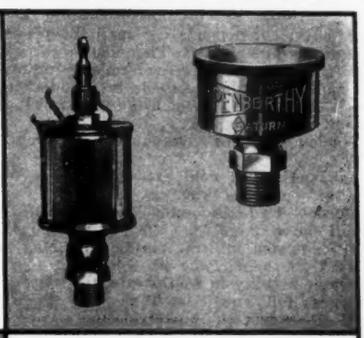

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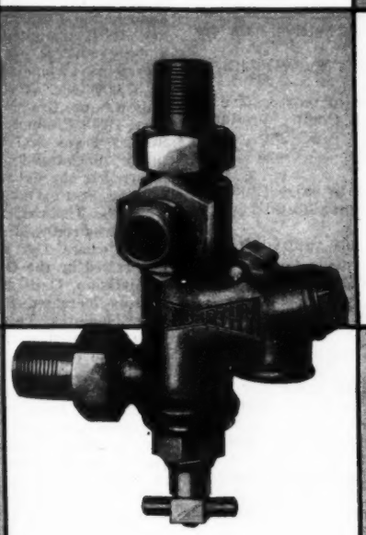

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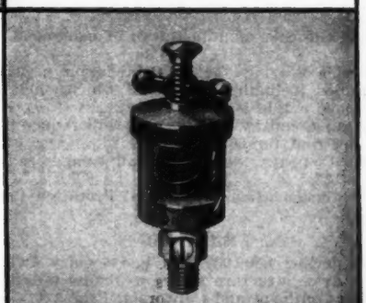

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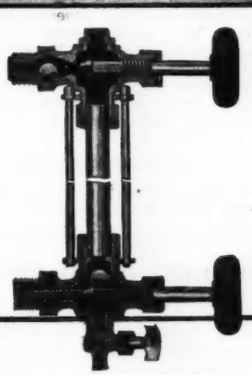

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SCORE SHEET ON OIL PRODUCTION

Below is shown allotted average daily production in the United States from October 1, 1930, to April 1, 1931, suggested by the American Petroleum Institute's special committee on the economic situation, and the actual daily average production during the week ending March 28:

	Allotted (bbls.)	Actual (bbls.)	Over (bbls.)	Under (bbls.)
Okla., Kans., S. W. Tex., N. Tex.*	953,700	1,041,184	87,484	.....
West Texas and S. E. New Mexico	316,300	275,163	.....	41,137
North Louisiana-Arkansas	86,400	86,335	.....	65
Gulf Coast	177,800	170,762	.....	7,038
Rocky Mountain	58,600	55,595	.....	3,005
California	530,100	529,500	.....	600
Other fields	110,600	111,000	400	.....
Total	2,233,500	2,269,539	87,884	51,845

Net average daily overproduction 36,039 bbls.
*North Texas includes North, Central and East Central Texas and Texas Panhandle.

STOCKS OF CRUDE OIL DECLINE 4,000,000 BBLS. IN FEBRUARY

WASHINGTON, D. C., Mar. 31.—According to reports received by the Bureau of Mines the production of crude petroleum in the United States during February, 1931, amounted to 60,645,000 bbls., a daily average of 2,166,000 bbls. This represents an increase in daily average of 37,000 bbls. over the previous month. This was the first increase reported since May, 1930. Production in the two leading States, Texas and California, was virtually unchanged from the previous month but the daily output of the third ranking State, Oklahoma, increased 15,000 bbls. The major portion of this increase was recorded in the Oklahoma City Field, where the allowable production was raised by the Oklahoma Corporation Commission. Daily average production in Kansas increased for the first time in several months. This resulted principally from increased activity in the Voshell Pool. The only other important increase noted in February occurred in Texas, exclusive of the Gulf Coast and West Texas. The daily average production of this area rose from 283,000 bbls. in January to 293,000 bbls., which increase was due almost solely to the production from the new East Texas fields.

Stocks of crude petroleum continued to decline as runs to stills continued in excess of production. Total stocks east of California on February 28 amounted to 361,887,000 bbls., a decline from the previous month of more than 4,000,000 bbls. Stocks of light crude in California showed a slight increase but the downward trend in heavy crude and fuel oil stocks in that State was continued. Total stocks of all oils were reduced 3,472,000 bbls. during the month. This decline occurred in crude stocks rather than in refined oils as the increase in gasoline stocks more than compensated the withdrawal from fuel oil stocks.

Daily average runs to stills of crude petroleum in February amounted to 2,330,000 bbls., an increase over the previous month of 71,000 bbls. The increase in crude throughput was reflected in motor fuel production, the daily average of which increased to 1,119,000 bbls. from 1,055,000 bbls. in January. Daily average exports of motor fuel fell to 129,000 from 158,000 bbls. the month previous. The daily average indicated domestic demand for motor fuel amounted to 933,000, a decline from a year ago of slightly over 1 per cent. Stocks of motor fuel were increased by 2,537,000 bbls. and amounted to 45,355,000 bbls. at the end of the month. These stocks represent 43 days' supply as compared with 42 days' supply on hand a month ago and with 47 days' supply on hand a year ago.

Late Fields

SALT WATER IN GREGG WELL

FORT WORTH, Tex., Mar. 31.—De Armand and others' No. 1 Fluellan in the Marshall Mann Survey, Upshur County, cored 8 feet from 3,783 to 3,791 feet and then swabbed salt water. This well is 6 miles north of the Lathrop Field in Gregg County and is the first well to test salt water in this district.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., Mar. 31.—Waldron and others' No. 1 Cooke, on Travis C. Cooke land, Travis County, is drilling at 812 feet with a showing of oil and gas.

KANSAS

Twin Drilling Co. and Phillips Petroleum Co.'s No. 1 Miller, located 300 feet from south line, 400 feet from west line of NE Section 3-21-6w, Rice County, flowed 100 bbls. of oil in 1 hour and 20 minutes. The well later made 226 bbls. of oil in nine and one-half hours through 2,000 feet of 2-inch pipe line to the stock tanks.

Derby Oil Co. and Empire Oil & Refining Co.'s No. 1 in the NE cor. NW Section 6-20-1w, swabbed 925 bbls. of oil in 12 hours from the Viola at 3,408-18 feet. The well extends the deep sand production a location to the south.

Olsen Drilling Co. and Shell Petroleum Corp.'s No. 1 in the SW cor. NW SW Section 36-19-2w, swabbed 690 bbls. of oil in eight hours from the Viola at 3,397 feet, which is the top of the sand at the total depth. The well extends production about a mile to the west.

OKLAHOMA

Initial gauges were taken in the Oklahoma City Field on two new wells. Westgate Oil Co.'s No. 1 Wilson, NE cor. SW NW Section 10-11-3w, flowed 5,082 bbls. of oil in four hours from Wilcox sand at 6,400-6,550 feet. The gas was estimated at 32,000,000 feet a day. Phillips Petroleum Co.'s No. 1 McBeth, NW cor. SE NE Section 3-11-3w, flowed 4,200 bbls. of oil in 1 hour and 25 minutes and was then shut in when the sand began cutting connections. The well was produced through a 4-inch choke with 473 pounds back pressure from the Wilcox sand at 6,312-6,411 feet.

Magnolia Petroleum Co.'s No. 1 Waggoner, NW cor. NE Section 18-14-4, in West Chandler Pool, Lincoln County, had the top of the Mayes lime at 4,500 feet and was coring deeper at 4,635-54 feet.

Carter Oil Co.'s No. 1 Robb, NW cor. SW NW Section 19-1s-2w, swabbed 1,187 bbls. of oil in 19 hours. The well is on the east side of the Tatums Pool, in Carter County. Production was found in sand at 1,741-1,856 feet, and the total depth 1,896 feet. The operators expect to shut the well in before it completes

(Continued on Page 113)

Here's the 1931 idea:

Build all refinery operations around your cracking plant

The cracking plant is today the heart of the refinery Crude stills are incidental

Skimming plants are out of date Out of date is out of pocket

Cracked gasoline is what the market demands

Dubbs cracking is the sensible way and the sure way to profit

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

New 70,000-Bbl. Well at Oklahoma City

Phillips Petroleum Co.'s Producer Flows at That Rate for Brief Period. State Production Registers Decline

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The State's production was returning to a figure near the allowed output which is 535,600 bbls. a day, for the week ending March 28, after showing an increase the previous week and reaching a new peak for the year. The daily average production for the current week was approximately 552,000 bbls. a day, a decline of 18,000 bbls. a day.

One of the State's largest wells was added to the Oklahoma City Field by Phillips Petroleum Co.'s No. 1 McBeth, NW cor. SW SE, Section 10-11-3w, on the west side of the producing area, flowing 4,168 bbls. of oil in 1 hour and 25 minutes, which is at the rate of 70,000 bbls. a day. The gas was estimated at 50,000,000 feet. The total depth is 6,411 feet in the Wilcox sand.

The producing area in the southwest part of the Oklahoma City Field was apparently defined by a test showing only a small amount of oil. Indian Territory Illuminating Oil Co.'s No. 1 Adeline Billen, NE cor. SE NE, Section 26-11-3w, on the southwest edge of the field, was bailed down and showed a small amount of oil, not enough to make a commercial producer from a total depth of 6,542 feet.

Wells completed in the Oklahoma City Field during the week were: Phillips Petroleum Co.'s No. 1 Temple, NE cor. NW, Section 10-11-3w, which made 8,405 bbls. in four hours from the Wilcox sand at 6,336-6,515 feet. Same company's No. 1 Schillings, SE cor. NW NE, Section 10-11-3w, flowed 7,034 bbls. of oil in four hours from Wilcox sand at 6,409-6,540 feet. Same company's No. 1 Mosey, E half NE SE NW, Section 10-11-3w, Highland Addition, flowed 5,483 bbls. of oil in four hours through a 4-inch choke with 225 pounds back pressure. The gas was estimated at 36,000,000 feet. The oil was found in the Wilcox sand at 6,305-6,436 feet. Indian Territory Illuminating Oil Co.'s No. 1 Erp, NE cor., Section 22-11-3w, flowed 1,776 bbls. of oil from the School Land sand at 6,580-6,620 feet. Champlin Oil & Refining Co.'s No. 2 Seal, NW cor. SW SW, Section 2-11-3w, made 55 bbls. of oil in 30 minutes from sand at 6,327-6,504 feet. Wilcox Oil & Gas Co.'s No. 1 Wright, NW cor. SW, Section 10-11-3w, flowed 2,055 bbls. of oil in four hours from Wilcox sand at 6,485-6,557 feet.

Leasing Continues Active

Leasing in the Oklahoma City Townsite continues active. Carter Oil Co. has taken a three-year lease on Lots 1 to 10 of Block D of the Artesian Heights Addition. Denver Producing & Refining Co. has a two-year lease on Lots B, C and D of the cotton compress properties. Franco-Dominion Development Co. has leased Blocks A and C of the Weesner Addition.

The city commission granted a permit to drill a well in the 800 block on East Grand to the Indian Territory Illuminating Oil Co. in Section 34-12-3w. The location is east of the recent completion of Tom Slick Oil Co.'s No. 1 Wespaco in Section 34-12-3w.

The west side of the Oklahoma City Field is expected to get a large number of locations following the completion of wells in that part of the field. A recent completion extended production two locations to the west. A test which is being watched is Riddle's No. 1 Giles, NE cor. NE NE SW Section 15-11-3w, which had sand at 6,400 feet, and cored to 6,424 feet, finding a saturated sand in the last 8 feet. Another test reconditioned is the Oklahoma City Petroleum Co.'s No. 1 Lively, CEL NW SE Section 15-11-3w, which was tested several days ago and was estimated at 4,000 bbls. Later it made a flow of oil and gas and was estimated at 1,000 bbls. an hour. The tanks on the lease are full and after the oil has been run and purchased by a pipe line company a production test will be made.

Ultimate Recovery

Opinions are widely divided on the ultimate total recovery of oil from the Oklahoma City Field. The majority of the opinions are based on the method of proration in effect in the area. The pool is allowed to produce 125,000 bbls. a day, which is 6 per cent of the estimated potential of 2,000,000 bbls. a day. The potential of 2,000,000 bbls. was placed on the area by the Oklahoma Corporation Commission. At present there are 750 wells completed in the pool and potential gauges have been taken on 551 wells since January 1. Potentials have been taken only on wells that are even with production. The 551 wells have a total potential of 6,011,948 bbls. according to Field Umpire Otto Bradford. The remainder of the 199 wells which have not had potential gauges taken are not included in the potential of 6,011,948 bbls. and the majority of these wells are Wilcox sand producers. Some estimate the remaining 199 wells are capable of yielding a potential gauge of 3,500,000 bbls. a day, bringing the total potential production of the field to a total of 9,500,000 bbls. a day.

The field is over two years old, being discovered December 4, 1928. Only a few of the older wells were allowed to flow wide open for any length of time. Some of the older producers have been used to establish a recovery basis for the field, while others have attempted to establish a recovery for the field taken from other pools in the State. The Oklahoma City Field has a higher pressure, the gas volume is greater and the sands are thicker than in any other field in the State.

1,000,000-Bbl. Leases

Some of the leases that show a total recovery of over 1,000,000 bbls. a day to March 15, are as follows: Cromwell-Franklin Oil Co.'s Trosper Park lease, in Sections 12-11-3w, and 13-11-3w, shows a recovery of 2,873,100 bbls. from 32 wells and leads the field in the amount of oil recovered. Wirt Franklin Petroleum Corp.'s Lowery lease, in Section 12-11-3w, shows a recovery of 2,540,250 bbls. from 10 wells and is second in the total amount of oil recovered to date. Coline Oil Co.'s Olds lease, in Section 24-11-3w, shows a recovery of 1,666,300 bbls. from 10 wells. Prairie Oil & Gas Co. and Tom Slick Oil Co.'s Hiddleston lease, in Section 19-11-2w, has a total recovery of 1,538,000 bbls. from seven wells. Sinclair Oil & Gas Co.'s Vencl lease in Section 31-11-2w, has produced a total of 1,487,000 bbls. from 16 wells. Same company's School Land-54, in Section 36-11-3w, has made a total of 1,465,300 bbls. from 16 wells. Coline Oil Co.'s Warren lease, in Section 18-11-2w, has made 1,212,000 bbls. of oil from eight wells. Indian Territory Illuminating Oil Co.'s Button lease, in Section 19-11-2w, has produced 1,254,500 bbls. of oil from five wells. Same company's Foster lease, in Section 24-11-3w, with one well, has made 1,140,200 bbls. of oil. Same company's Mable Fuzzell lease, in Section 19-11-2w, has made 1,279,000 bbls. of oil from three wells. Same company's discovery well, in Section 24-11-3w, shows a total recovery of 1,036,600 bbls. of oil. Same company's Sudik lease, in Section 31-11-2w, shows a recovery of 1,046,665 bbls. from 10 wells. Same company's Trosper lease, in Section 13-11-3w, has a recovery of 1,241,500 bbls. from 11 wells. Mid-Kansas Oil & Gas Co.'s Fortson lease, in Section 24-11-3w, has made 1,203,200 bbls. from five wells.

April Potentials

The Oklahoma City Field umpire, Otto Bradford, started taking new potential tests April 1, and expects to complete between 50 and 60 wells a day and at that rate the entire field may be completed by the middle of the month. The last potentials were taken January 1.

The pipe line runs and tank car shipments for the week ending March 25 were 156,446 bbls. a day, a new peak for the field.

April potentials for leases in the Allen (shallow and Wilcox), Old Earlsboro, Earlsboro, Townsite, Maud, Seminole, East Seminole, Searight, St. Louis, East Earlsboro, Sasakwa, Bowlegs, Mission, Little River, Carr City (settled production), and East Little River Pools, were determined by 10-day open flow gauges March 5 to 15 and March 15 to 25.

Potentials for the month of April from all wells in the West Chandler Pool, in Lincoln County, producing from the Wilcox-Simpson formation, were taken from 7 a.m. April 1 to 7 a.m. April 2.

The class "A" wells in the South Earlsboro Pool were allowed to flow to full capacity April 1, and the class "B" wells on April 2. The total production from the class "A" and "B" wells on these dates was considered the potentials of the month.

Leases in the Wewoka townsite pool were allowed to take a 3-hour open flow test from 7 a.m. to 10 a.m. April 1, and eight times the amount of oil produced during the period was considered the daily potential production.

The Wanette and West Asher Pools were opened for a 6-hour gauge from 7 a.m. to 1 p.m., and four times the amount of oil produced during the period was considered the daily potential production.

The Konawa and West Seminole Pools and the flush wells in the Carr City extension pool were opened to full capacity for one day on April 1 from 7 a.m. to April 2, at 7 a.m.

Superintendents or their representatives on leases where the tests were taken were appointed as representatives of the umpire, and it was the duty of the representatives to witness the gauging of the production on adjoining leases during the time the wells were open to full production for the purpose of determining potentials. Any other interested parties were permitted to witness the gauging of the leases. Upon the completion of the gauge the witness and the operator whose lease was gauged must file a statement with the umpire showing the production of the lease and the method of computation.

May Prove New Area

An interesting test, located between the East Earlsboro and Searight Pools, may prove to be a producer and open another producing area in the Seminole group. The test is rigging up standard tools after cementing casing at 4,132 feet. The corrected top of the Viola lime is 4,125 feet, which is considered to be favorable on structure for the area. Other acreage owners in the vicinity are Prairie Oil & Gas Co., Minnehoma Oil Co., and Gypsy Oil Co.

Withdrawals from Storage

The demand for Greater Seminole crude oil has been increasing during the past few weeks. Such a condition is indicated by the withdrawals of crude oil from storage. The area has a total of 18,000,000 bbls. of storage oil. During the past four weeks crude has been withdrawn as follows: Week ending March 16, a daily average of 6,932 bbls.; March 9, 13,286 bbls. daily; March 2, 15,972 bbls. daily; February 23, 4,282 bbls. daily. The decline for the week ending March 16, is believed to be because of the open flow potentials which started in the Greater Seminole area March 15.

The second group of wells in the Greater Seminole area completed the 10-day open flow gauge March 25. The seven pools averaged 145,281 bbls. for the 10-day period. Umpire Ray Collins estimated the same pools at 146,232 bbls. for the month of March. The pools averaged as follows: Bowlegs, 20,119 bbls.; Carr City, 6,586 bbls.; East Earlsboro, 28,978 bbls.; East Little River, 11,018 bbls.; Little River, 48,403 bbls.; Mission, 16,977 bbls.; Sasakwa, 4,200 bbls.

The first group of wells completed the open flow potentials March 15, and these gauges indicated the umpire's figures were as nearly correct as possible by deducting a 3 per cent decline each month. The total actual production from the open

(Continued on Page 89)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Shut down 5,340 ft.

BECKHAM COUNTY

Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-26w	Drlg. 1,990 ft.
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cement to set 430 ft
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-22w	Shut down 2,650 ft.
White et al's No. 1 Green, SW cor. Sec. 34-10-24w	Drlg. 2,880 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w	Drlg. 4,665 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	Shut down 1,115 ft.

COAL COUNTY

McGraw Oil Co.'s No. 1 Ward, NE SE Sec. 35-1-8	Drlg. 500 ft.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	Shut down 760 ft.

COMANCHE COUNTY

Croy & Young's No. 1 Cline, NW NE NE Sec. 9-3-10w	Shut down 2,282 ft.
G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,450 ft.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w	Shut down 5,850 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w	Shut down 100 ft.

GARVIN COUNTY

Malarnee et al's No. 1 Phillips, NE SW SE Sec. 24-2-2w	Location.

GREER COUNTY

French's No. 1 Murphy, SW NW Sec. 23-7-21w	Shut down 1,490 ft.

HARMON COUNTY

Harmon-Tex Oil Co.'s No. 1 Hoadley, NE cor. Sec. 17-4-24w	Shut down 2,593 ft.
S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w	Abandoned 625 ft.

(Continued on Page 134)

The first natural gas line to cross the Great Divide

A three hundred mile natural gas line tapping the fields in the San Juan basin at the northwest corner of New Mexico and bringing a new resource to the area in which Albuquerque, Santa Fe, and Las Vegas are situated has been laid by the Southern Union Gas Company. This pipe line commands attention as an engineering achievement and a development of economic importance.

Rivers, canyons, forests and rocky ranges—great obstacles had to be reckoned with. Its course lay through dense wilderness, across the Rio Grande and over the Continental Divide. Airplanes dropped markers to flag the right-of-way. Special roads and bridges were built ahead of the giant trucks and trailers that carried and strung out the pipe. The workers who manned these operations, together with others who worked along the line, were exposed to scorching heat—fifty degrees of difference between day and night temperatures in July and August. Yet record time was made and natural gas is now available through the longest pipe line in New Mexico.

As on other undertakings where conditions are exacting and the utmost assurance of unfailing service is required, NATIONAL Pipe was used for the major part of the line. This is but one more demonstration of the confidence of well advised users in NATIONAL—

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NATIONAL PIPE

Find Oil in Decker Extension Wells

Wildcats in Western Kansas May Develop Into Producing Areas in Ellsworth and Rice Counties. Ford County Wildcat Spudding

By W. A. Spinney
Staff Correspondent, Kansas Fields

During the week ending March 28, several wildcats were brought into production and new wells were being completed in the Ritz-Canton area extending the producing area in all directions. The State's daily average production shows little change from the preceding week being approximately 109,000 bbls., a decline of 500 bbls.

Two wildcats in western Kansas found oil during the week and the new strikes may later develop into pools. The tests were in Ellsworth and Rice Counties.

The Ellsworth County wildcat, which may open a new producing area, is the second showing found in the past few days. A. Alyward, Ray Tack and W. H. Allshouse's No. 1 Stratman, SE cor. NW SE, Section 1-17-10w, in the southwestern part of the county, found oil in the Silicious lime at 3,255-60 feet. The oil rose 2,700 feet in three hours and after a short time was slopping over the top of the hole. The oil is reported to be 47° gravity at 72. The well is shut down, awaiting tankage, for production test. The test found a showing of gas estimated to be 1,000,000 feet a day, last week, from the Oswald lime at 3,017 feet. The test is northeast of Slick, Pryor and Lockhart and others' No. 1 Heiken, in NW cor., Section 25-17-10w, another wildcat, which was completed and shut in October, 1930, awaiting a pipe line connection. The well is estimated to be 2,000 bbls. and is believed to be on the same general regional structure as the second wildcat.

The other wildcat finding oil was in Rice County, Hinkle, Strak and Cress' No. 1 Sharp, SE cor. NE, Section 13-20-10w, southwest of Chase, which found a hole full of oil and was soon slopping over from the Silicious lime at 3,330-36 feet. The oil rose 3,000 feet in the hole in eight hours. The operators were preparing to land a liner before swabbing the well. It is located about 3½ miles southwest of the Schurr Pool in the same county which is considered to have a large potential.

Cowley County Well

The new well of Roth and Faurot, No. 4 Holt, NW cor. SE, Section 12-32-4, near Winfield, Cowley County, is estimated at 400 bbls. It was producing from a total depth of 2,369 feet, and the oil there was exhausted and the test was drilled deeper to a total depth of 2,652 feet, the present producing horizon.

Fisher and Lauck's No. 1 Souders in Section 1-28-1, a wildcat in Sedgwick County, south of production in the Eastborough Pool, was spudding.

The operators in Kansas are uncertain as to the future of production in the State since the new proration measure was signed by Governor Woodring. Producers are waiting for the new law to be applied to the different oil pools, and others are hoping the measure will provide an outlet for the oil from wells now shut in. Some of the wells are in isolated areas and were completed months ago, and are still without a market outlet.

Ritz-Canton Area

The most active area in the State is the Ritz-Canton area in McPherson County, which includes the chat and deep sand production and overlaps into the Decker gas field. A total of 50 tests are drilling. A total of 39 wells have been completed and, the first week in April a potential test of all the completed wells in the field will be taken. All the completed wells will be allowed to produce wide open for 24 hours. Tests started after March 17 when completed will be allowed a 24-hour open flow after which they will be shut in for 30 days and then put on production at the same percentage of proration in force at the time. Many express the opinion the Ritz-Canton Pool, will cover a larger area than any pool yet found in the State, including the Decker gas field. The deep production, which was found a few months ago is the latest horizon to be found productive. The territory now extends over an area 2 miles north and south and approximately a mile east and west.

The most recent test to produce from the Viola formation, which is known as the deep sand production, is Olsen Drilling Co. and Shell Petroleum Corp.'s No. 1 Johnson, SE cor. NW SE, Section 36-19-2w, which extended production three-quarters of a mile west and many believed proved hundreds of acres of potential Viola lime production. It filled with 2,000 feet of oil in 15 minutes from the top of the Viola at 3,397 feet. Drilling operations were suspended in the 6-inch hole pending the landing of 5-inch casing. The test is believed to be high on structure and the well may prove to be as large or larger than any of the others previously completed. The test was started about a year ago, being drilled to the chat horizon at approximately 2,-950 feet, which was found to be dry and was then shut down. The discovery of the deep pay formation at No. 1 Garrett, SW cor. NE, Section 30-19-1w, about 2 miles northeast of No. 1 Johnson, was the cause of drilling the test to the Viola formation. Drilling operations will be resumed after the casing has been landed and stock tanks have been erected.

The Viola formation in the Ritz-Canton area was also extended south by another producer estimated to be a 2,000-bbl. well. Empire Oil & Refining Co. and Derby Oil Co.'s No. 1 Domach, NE cor. NW, Section 6-20-1w, swabbed 91 bbls. an hour for five hours and is estimated to be a 2,000-bbl. producer. The well found the Viola formation at 3,408-14 feet, and is the most southerly Viola lime producer in the area. The well made 455 bbls. of oil, and as soon as additional tankage is erected is to be given a 12-hour production test and then shut in for 30 days under the voluntary unit proration plan governing the Ritz-Canton area.

The southeast extension test in the Ritz-Canton area was not showing to advantage from the deep pay horizon. United Petroleum Corp. and Stearns, Streeter Co.'s No. 1 Blair, NW cor., Section 32-19-1w, found oil which rose 200 feet in the hole from the Viola at 3,431-50 feet. The hole was caving and may be drilled deeper. The test is about a half mile southeast of the discovery well and also found a showing of oil in the chat.

Decker Gas Field

The appearance of water in chat wells on the northeast side of the Decker gas field indicates the edge of the producing area may be near at hand. Madison and others' No. 1 in the SW cor. NE SE SW, Section 1-19-2w, found a hole full of water in the chat and was preparing to drill deeper from the present total depth of 2,995 feet. Same operators' No. 1, SW cor. SE, Section 1-19-2w, also had water in the chat. Some express the opinion the trend of the production will be to the southeast where it is expected to join the producing wells in the Ritz-Canton area.

Mid-Kansas Oil & Gas Co.'s No. 1 Whitright, SW cor., Section 30-19-1w, had the top of the chat at 2,925 feet where a show of gas was found. The test is a half mile southwest of the discovery well which is producing from the Viola lime. The test may be drilled to the Viola lime.

Producing Area Widened

The producing area in the Ritz-Canton Field was widened by new wells. On the east flank of the Decker gas area oil was found in the chat. W. C. McBride, Inc.'s No. 1 Gustafson, C NW NW Section 12-19-2w, and G. P. Dickey and Shell Petroleum Corp.'s No. 1 Williams, NE cor. NW Section 26-19-2w, extended the producing area three-quarters of a mile south. W. C. McBride, Inc.'s No. 1 Gustafson, in Section 12-19-2w, flowed 142 bbls. of oil in 3 hours and 15 minutes. The gas is estimated at 2,000,000 feet. The chat was found from 2,927-67 feet. G. P. Dickey and others' No. 1 Williams, NE cor. NW Section 26-19-2w, was flowing 50 bbls. of oil an hour for four hours after being drilled deeper to a total depth of 2,939 feet. The well previously had been flowing 5 bbls. an hour from the chat at 2,895-2,937 feet. The gas was estimated at 3,000,000 feet. The well is about 3 miles northwest of the discovery well in the Ritz Pool, and opens a new area with chat oil production south of the Decker gas pool. The well is about a mile and half west of the deep sand production.

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

Company, farm and location—	Remarks:
BARTON COUNTY	
Syndicate Oil Co.'s No. 1 Boertz, NW SE SE Sec. 13-18-12w	Shut down 1,820 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE Sec. 16-19-14w	Shut down 2,065 ft.
McCool et al's No. 1 Tsern, NW SE NE Sec. 12-20-11w	Shut down 1,600 ft.
CLARK COUNTY	
Watchorn's No. 2 Morrison, NW NE Sec. 20-32-21w	T. D. 6,909 ft.; plugged back to 6,520 ft. to test show gas; abnd.
CLAY COUNTY	
Crystal Oil et al's No. 1 Tivier, SW cor. Sec. 19-8-2	Shut down 2,390 ft.
COFFEY COUNTY	
Heyburg's No. 1 Kroft, SE SW SE Sec. 30-22-14	Shut down 1,300 ft.
Roberts et al's No. 1 Hay, SW SE NW Sec. 32-22-15	Shut down 1,250 ft.
COWLEY COUNTY	
Fisher et al's No. 1 Hurt, C SW SE SE Sec. 11-34-3	Rig.
Roth & Farout's No. 1 Reedy, SW NW NE Sec. 8-32-4	Shut down 1,040 ft.
Tom Fine's No. 1 Boyd, NW NE Sec. 23-32-4	Shut down 2,650 ft.
DICKINSON COUNTY	
Severs et al's No. 1 Lavengood, NE SW Sec. 13-13-2	Shut down 3,850 ft.
ELLSWORTH COUNTY	
Gilmore Oil et al's No. 1 Sturm, NW SW Sec. 31-17-9w	Drlg. 2,100 ft.
Hershey et al's No. 1 Schultz, C NE Sec. 9-14-8w	Drlg. 368 ft.
Alyward et al's No. 1 Stratman, SE NW SE Sec. 1-17-10w	Drlg. 2,710 ft.
Aladdin Pet.'s No. 1 Stoddenberg, C SW Sec. 22-16-10w	Shut down 1,130 ft.
Milton et al's No. 1 Kester, SE NE Sec. 6-14-9w	Shut down 1,476 ft., making 2,-000,000 ft. gas.
FORD COUNTY	
Carter Oil Co.'s No. 1 Everett, C NE Sec. 22-29-21w	Spudding.
Swain et al's No. 1 Taylor, C NW Sec. 21-25-24w	Drlg. 4,620 ft.
GRAHAM COUNTY	
Schleimeyer et al's No. 1 Clark, SW NE NE Sec. 11-9-25w	Drlg. 3,906 ft.

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Gypsy Oil Co.'s No. 1 Coleman, C SW NE Section 25-17-25w, Ness County wildcat, which has been fishing at 4,160 feet for several months, has resumed drilling operations. It was reported to be drilling at 4,170 feet.

Carter Oil Co.'s No. 1 Everett, C NE Section 22-29-21w, a wildcat in Ford County, was spudding. It is being drilled on a core drilled block of acreage. The company has secured leases on approximately the entire township. The Sinclair Oil & Gas Co., which had approximately 128,000 acres of leases in the vicinity has turned back all but 7,000 acres in Township 21-22w, 21-23w, 22-22w and 22-23w.

Several new tests are expected to be started in the Ritz-Canton area. Shell Petroleum Corp. has farmed four tracts to the Gled Oil Co. on which tests may be started in the near future. The acreage is in the NW of Section 30-19-1w, in the N half NE Section 30-19-1w, SE Section 30-19-1w, and W half SW Section 20-19-1w. Most of these tracts now offset producing wells.

Butler County

Magnolia Petroleum Co.'s No. 65 Koogler, SE cor. SW NW, Section 21-26-5, is drilling at 1,000 feet. Blaksley & Wentz' No. 2 Holliday, SE cor. SW SW NE, Section 24-27-4, is spudding.

Cowley County

Roth & Faurot's No. 4 Holt, NW cor. SE, Section 12-32-4, is rigging up. Lewis Production Co. is erecting the rig for No. 1 Stark, SE cor. NE SW, Section 19-34-7. Roth & Faurot's No. 1 Smiley, SE cor. NW, Section 12-32-4, has been completed for 250 bbls. in Kansas City lime 2,565-88 feet.

Greenwood County

Gore and Phillips Petroleum Co. moved a machine in for No. 1 Edwards, NE cor. SE NE, Section 35-24-10. Simmons and others' No. 4 Wineger, NW cor. SW, Section 27-23-11, has been completed for 80 bbls. in sand 1,901-30 feet.

McPherson County

Graham Brothers' No. 1-A Rolander, SE cor. SW SW, Section 30-18-2w, is rigging up to deepen from 2,395 feet. No. 2 Rolander, SW cor. NW SW, Section 30-18-2w, is a rig under construction. McPherson Oil & Gas Development Co. and Shell Petroleum Corp.'s No. 1 Ostlind, C SW NW, Section 12-19-2w, made 45,991,000 feet of gas from chat 2,900-08 feet.

Morris County

Loomis and others' No. 1 Munsell, C SW SE, Section 15-16-7, is spudding.

Russell County

Signal Oil Co. and Mid-Kansas Oil & Gas Co.'s No. 1 Berry, NW cor. SW SW, Section 27-15-13w, has been abandoned at 3,438 feet.

Stevens County

Argus Production Co. made location for No. 1 Greenwood, C NE, Section 11-34-38w. Trees Oil Co.'s No. 1 Meyer, C SE, Section 27-34-39w, has been completed for 14,000,000 feet of gas in sand 2,591-2,702 feet.

RUMANIAN PRODUCTION

NEW YORK, Mar. 30.—January production of crude petroleum in Rumania totaled 600,000 tons, a decrease of 50,000 tons from December output but 150,000 tons in excess of production during January, 1930, according to Moniteur du Petrole Roumain.

Astra-Romana was the principal producer in January this year with 115,565 tons output, other large producers being as follows: Steaua-Romana, 84,091 tons; Concordia, 80,549 tons; Creditul-Minier, 62,217 tons; Phoenix Oil, 62,149 tons, and Romana-Americana, 47,716 tons.

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Zwolle Field Gets Two-Mile Extension

New Producer Making 1,200 Bbls. Through Small Choke. Twelve Completions in Area During the Past Week

By J. B. Crumpton
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Mar. 30.—A 2-mile northeast extension of the southeast part of the Zwolle oil field was proven the past week when Merritt, trustee's No. 1 Byrd, Section 1-7-11, Sabine Parish, came in flowing at the rate of 1,200 bbls. of oil daily through a small choke. Total depth was 2,445 feet. The new well is 3 miles east of Pelican Natural Gas Co.'s producers in Section 4-7-11, and is 2 miles northeast of The Texas Company's No. 1 Stoker, Section 1-7-11.

Another well which extended production slightly southwest in the newly opened south extension of the Zwolle East field is H. W. Perritt's No. 3 Bowman-Hicks, Section 2-7-12, which is making 30 bbls. daily by heads from a total depth of 2,440 feet. This well is a half mile southwest of Loring Oil Co.'s No. 15 Bowman-Hicks in the same section and is a quarter mile northwest of Pelican Natural Gas Co.'s No. 5 Sabine.

These extensions make this area approximately 21 miles from east to west in an inverted half moon shape. W. M. Coates is drilling plug at 2,207 feet on his No. 2-A Sabine Lumber Co., Section 1-7-12, having topped the Zwolle marl at this depth, where 6⅝-inch casing was set. The Natural Gas Production Co. has recently made a location in this same section for a test, and W. M. Coates is drilling at 760 feet on No. 3 Sabine Lumber Co. after setting 10-inch at 103 feet. Ohio Oil Co. is bailing at 2,342 feet on No. 7 Bowman-Hicks, Section 2-7-12, and has derrick up on No. 8 Bowman-Hicks in the same section.

Making Good Progress

Harry I. Morgan is making rapid progress on No. 13-B Kendrick, Section 22-19-11, Bossier Parish, after junking the first hole and is coring at 1,706 feet. R. O. Roy, in the same parish, Elm Grove section, tested salt water at 2,620 feet with small show of oil on his No. 1 Hodges, Section 19-16-10. In Caddo, United Production Corp. is drilling at 5,140 feet on No. 1 Emmons, Section 27-23-16. National Drilling Co., in Catahoula Parish, tested salt water at 3,097 feet and is pulling liner to drill deeper on No. 1 Marsh McMiller, Section 26-9-6. A development of importance is the new gasser brought in by United Gas Public Service Corp. on No. 3 Saunders, Section 11-8-9, in Concordia Parish. This test was reported last week as an estimated 7,000,000-foot gasser, but has since increased production to 28,000,000 feet with 615 pounds rock pressure. A wildcat disappointment was W. M. Coates' No. 1 Collins, Section 28-9-10, Natchitoches Parish, which showed salt water through drill stem test from 4,020-91 feet. This test showed oil after coring a few days ago and is now shut down waiting orders.

Arkansas Operations

In the proven area, L. H. Hamilton's No. 3 Doyle, Section 23-15-16, Smackover district, is fishing for 600 feet of 2½-inch tubing at 2,091 feet with 600 feet of fluid in the hole showing 2 per cent salt water. In the Stephens area, J. D. Reynolds' No. 1 Grayson, Section 21-15-15, has 1,500 feet of fluid in the hole at total depth of 2,197 feet and is waiting for standard rig.

In Pope County, Arkansas-Louisiana Pipe Line Co. is drilling in water sand at 4,131 feet on No. 2 McFaddin, Section 15-9-21. S. B. Hickman's No. 1 Hogg, Section 35-16-17, Union County, has plugged back to the Natchitoches sand after reaching a total depth of 3,328 feet. In Dallas County, E. C. Brewer tested dry on his No. 1 W. E. Hillman, Section 20-10-13, at 2,628-49 feet and is coring at 2,671 feet. In the same county, J. H. James, trustee, is coring at 2,370 feet on his No. 1 Fordyce Lumber Co., Section 20-10-13. H. W. Givens and others' No. 1 Garrett, Section 1-3-9, in Garland County, has 1,300 feet of 5⅞-inch pipe in the hole and has temporarily abandoned at 3,756 feet.

East Texas Wildcats

An interesting test in Cass County, Texas, is J. E. Smitherman's No. 1 Fell, J. Farrell Survey, in the southwestern part of the county where he is reported drilling at 3,553 feet in shale. In the same county, S. D. Hunter's No. 1 Marshall Felkner has set 12-inch at 205 feet and is drilling at 1,050 feet. W. G. Ray Drilling Co. is drilling at 2,400 feet on No. 1 F. C. Hall, Harrison County. The Sinclair Oil & Gas Co. recently acquired a half interest in this well, making three active tests in this area that this company is interested in. The Sinclair company is also making rapid progress on No. 1 White, C. S. White Survey, in Marion County, began March 18 and now drilling at 2,253 feet.

New Drilling Blocks

In DeSoto Parish, Louisiana, Gloster Drilling Co. has blocked 7,500 acres centering around the northwest corner of the northeast quarter of Section 32-14-14 with drilling to begin by May 1 for a total depth of 5,000 feet. In the same parish, Ben Merritt has signed a contract to drill a 3,000-foot test on a 2,000-acre block with location to be in the center of the northwest quarter of Section 32-12-12 and operations to begin by April 1.

In Cass County, Texas, Mr. Brimm of Tulsa has 4,000 acres centered around the Bryant Holmes Survey with contract for a 6,000-foot test to start not later than May 1. Sam Jarvis of Arkansas City, Kans., also has a block in Cass County consisting of 5,500 acres west of Atlanta on the Peter M. Keeton Survey, consideration being $1 per acre and a well.

Completions

There were 12 completions in the territory during the week, 2 gas wells, 3 oil wells and 7 dry holes. The outstanding gasser was the Citizens Gas Co.'s No. 1 G. W. Wood, Section 18-9-32, a wildcat in Crawford County, Arkansas, which blew in gauging 20,000,000 feet at a depth of 960 feet. The other gas well was in the Sligo proven area when United Gas Public Service Corp.'s No. 1-A Smith came in estimated at 2,500,000 feet at 2,488 feet. Arkansas furnished one small producer in the Champagnolle district with Ohio Oil Co.'s No. 5-R Pumphrey completed as a 175-bbl. pumper with 50 per cent salt water.

The dry holes were scattered over seven counties in the three states. R. H. Libby and others' No. 1 Foster, Section 29-15-6, Caddo Parish, abandoned at 3,235 feet; S. A. Guy's No. 1 Dowling Brothers, Section 31-14-14, in DeSoto Parish, has been shut down for some time and abandoned on account of expiration of leases. This well only reached a total depth of 1,354 feet. Gulf Refining Co. abandoned No. 1 Bodcaw, Section 13-13-8, Natchitoches Parish, at 4,219 feet. Other tests found dry were: Southern Carbon Co.'s No. 1 C. M. Noble, Richland Parish, at 2,495 feet; Franks and others' No. 1 Hays, in Sabine Parish, 2,534 feet; Crump & Hennegan, in Harrison County, abandoned their No. 1 Dunn at 3,560 feet, and C. H. Murphy and others found their No. 1 Union Saw Mill Co. dry at 3,615 feet in Union County, Arkansas.

Daily Average Runs

The fields showed a net decrease of 840 bbls. daily in pipe line runs last week. Daily average runs from the several pools were:

NORTH LOUISIANA

Caddo, light	7,725
Caddo, heavy	2,755
Homer	3,360
Haynesville	5,680
DeSoto-Red River	2,690
Elm Grove	450
Bellevue	545
Cotton Valley	1,800
Urania	4,600
Pleasant Hill	445
Sarepta-Carterville	1,395
Zwolle	7,650
Holly	620
Total North Louisiana	39,715
Previous week	39,930
Decrease	215

ARKANSAS

El Dorado	3,790
Smackover, light	4,190
Smackover, heavy	31,840
Stephens	855
Nevada	990
Lisbon	760
Champagnolle	3,110
Bradley	55
Urbana	1,030
Total Arkansas	46,620
Previous week	47,245
Decrease	625
Both states	86,335
Previous week	87,175
Decrease	840

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH—CARTERVILLE

Company, farm and location— Remarks—

Del.-La. Dev. Co.'s No. 6 Bollinger, 330 ft. S, 220 ft. W, NW cor., Lot 17, in Lot 16, Sec. 31-23-11.....T.D. 3,217 ft; abd; not commercial pumper.

BOSSIER PARISH—SLIGO

United Gas Public Service Corp.'s No. 1 Smith, 1,980 ft. S, 342 ft. W, NE cor., Sec. 14-17-12.....Completed Mar. 20 2,500,000 ft. gas; T.D. 2,488 ft.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1 Edgar, 1,460 ft. S, 1,900 ft. E, NW cor., Sec. 17-16-16.....Temporarily abd.

Calatex O. & G. Co.'s No. 1 McAnn-Alfred, 1,310 ft. S, 970 ft. E, NW cor., Sec. 17-16-16.....Location temporarily abd.

CADDO PARISH—MOORINGSPORT

Falcon Oil Co.'s No. 5 Nunnally, 2,379 ft. N, 3,849 ft. E, SW cor., Sec. 29-20-15.....W.O.S.R. 2,360 ft.

CADDO PARISH—OIL CITY

Trio Corp.'s No. 1 Levee Board, 212 ft. S, 500 ft. E, NW cor., Sec. 17-20-15.....Bailed dry 1,605 ft.

CADDO PARISH—PINE ISLAND

Haynes Bros.' No. 2 Spell, 956 ft. W, 200 ft. N, SE cor. SE, Sec. 15-21-15.....S.D. 3,962 ft.

Shreveport Oil Corp.'s No. 8 Hicks, 600 ft. S, 800 ft. E, NW cor., Sec. 32-21-15.....Set 10-in. at 60 ft., 6-in. at 1,308 ft; T.D. 1,600 ft.

Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15.....Set 10-in. 150 ft; S.D.

CLAIBORNE PARISH—HOMER

La. Oil Ref. Corp.'s No. 1 Langston, 660 ft. S, 528 ft. E, NW cor. SW SW, Sec. 19-21-7.....Abd. 4,504 ft.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 2-20-4.....Location.

OUACHITA PARISH

Jordan Drlg. Co.'s No. 7 Cole, 265 ft. S, 1,459 ft. W, NE cor., Sec. 49, in Sec. 50-18-4.....Location.

United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4.....Location.

RICHLAND PARISH

Ark.-La. P. L. Co.'s No. 5-C Thomason, 350 ft. S, 217 ft. E, SW cor. NE NE, Sec. 21-16-4e.....Drlg. lime and shale 2,041 ft.

(Continued on Page 99)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location— Remarks—

Coyle Bros.' No. 1 Lawhon, 300 ft. N, 300 ft. E, SW cor. SE NE, Sec. 15-16-3.....Milling on collapsed csg. 2,854 ft.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 15-22-14.....Coring 2,545 ft.

Dr. W. N. Hankins' No. 1 Newell, Sec. 12-19-11, 300 ft. S and W of NE cor. section.....Derrick.

H. I. Morgan's No. 13-B Kendrick, 2,840 ft. E, 1,320 ft. W, SW cor., Sec. 22-19-11.....Coring 1,706 ft.

Rombaugh et al's No. 1 Allison, SW SE, Sec. 10-19-13.....Arranging to deepen; T.D. 1,600 ft.

R. O. Roy's No. 1 W. H. Hodges, C NW NW, Sec. 19-16-10.....Tested salt water 2,620 ft; small show oil; W.O.

CADDO PARISH

R. E. Davidson et al's No. 1 Weiller, Sec. 33-17-13.....Tested dry; D.S. test 2,440-71 ft.

Garry M. Gordon's No. 1 Hatcher, 560 ft. E, 600 ft. S, NE cor. NW, Sec. 11-17-15.....Location.

R. H. Libby's No. 1 Foster (was Gooch et al's), Sec. 29-15-16.....Dry and abd. 3,235 ft.

Pyramid O. & G. Co.'s No. 1 Wheeler, 3,200 ft. W, 75 ft. N, SE cor., Sec. 9-18-16.....Cmtd. 6⅝-in. 2,779 ft; T.D. 2,787 ft.

United Prod. Co.'s No. 1 Emmons, 1,337 ft. E, 660 ft. N, SW cor., Sec. 27-23-16.....Drlg. 5,140 ft.

United Gas Public Service Corp.'s No. 1 Fortner, 330 ft. S, 330 ft. E, NW cor., Sec. 5-22-16.....Set 5-in. at 5,430 ft.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4.....Derrick.

Hudson et al's No. 1 Burton, Sec. 35-13-3e.....S.D. 2,621 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6.....Tested salt water 3,097 ft; pulling liner to drill deeper.

CLAIBORNE PARISH

Baird Bros. et al's No. 1 Whittaker, 600 ft. N, 400 ft. W, SE cor. NE, Sec. 30-20-7.....Drlg. hard shale 2,710 ft.

(Continued on Page 99)

Naylor SPIRALWELD Pipe...

Structurally Strong Yet

LIGHT IN WEIGHT!

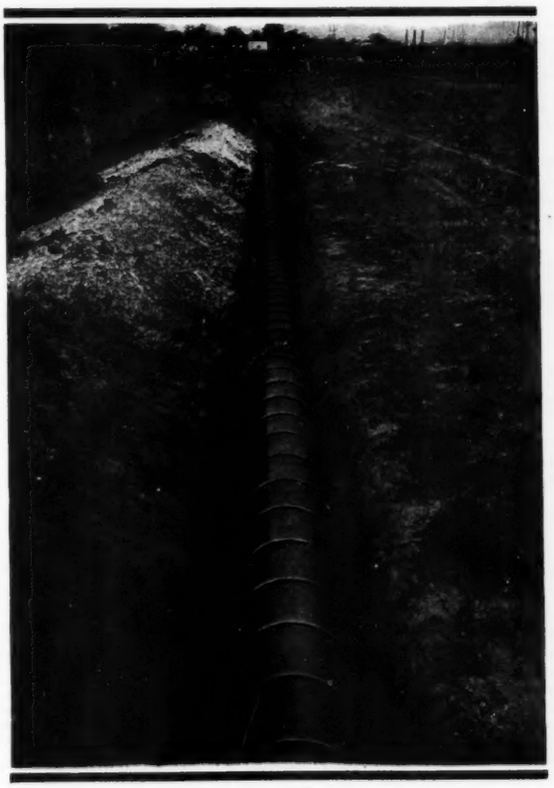
NAYLOR SPIRALWELD Pipe weighs one-half as much as standard weight wrought pipe, yet it is being used for the same pressures because of the added strength provided by its SPIRALWELDED lock-seam.

■ A strong pressure pipe, light in weight, is a good investment.

■ Light weight Naylor SPIRALWELD Pipe can be loaded, transported, unloaded and strung at less cost. And, since it is easy to handle, fewer men are required in the field. Consequently, coupling and laying costs are lower.

■ A comparison of the cost figures made by a large oil company which laid a Naylor SPIRALWELD Pipe line and a standard weight pipe line (of the same diameter) showed light weight Naylor SPIRALWELD Pipe to have effected savings of $500. to $2000. per mile—in trucking, unloading, stringing and coupling costs alone!

■ For long life Naylor Pipe is made from Toncan Iron—the corrosion resisting alloy of iron, copper and molybdenum.



A 16" Naylor SPIRALWELD Pipe line, 40-foot lengths—serving a prominent company in Oklahoma.

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LOS ANGELES: Champion & Barber, Inc., 576 Subway Terminal Building., Exclusive Distributors: California, Nevada and Arizona
MONTREAL, CANADA: Mechanical Equipment Company, 660 St. Catherine St., West
VANCOUVER, B. C.: Gordon & Belyea, Ltd., 101 Powell Street
MEXICO: C. H. Elstner, Apartado 284 Monterrey N. L.

New Brazoria County Field Indicated

If Test Is Completed as Commercial Well It Will Set New Deep Production Record for Gulf Coast. Rank Wildcat

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Mar. 30.—Indications of another new field for the Gulf Coast were given the past week when The Texas Company's No. 1 O. F. Ewing, 50 feet out of the NE cor., Lot 29, Harvey N. Little Survey, northern Brazoria County, blew in making an estimated 50,000,000 feet of gas and a spray of oil and water with a pressure of 1,500 pounds through a half-inch choke from a sand at 7,590 feet.

Although developments have not been encouraging for completing this well as a commercial producer, especially considering the depth of 7,590 feet, the showing has been sufficient to prove the existence of production in that area. This well quickly dropped off in production and Saturday was making but very little gas, pressure being down to below 100 pounds, and operators were preparing to go back in the hole. It is possible the hole might have bridged, shutting off the production.

If this well can be completed successfully, it will set a new deep production record for the Gulf Coast, exceeding Yount Lee Oil Co.'s Housierre-Latrielle wells on the southeast side of the Jennings Field, Acadia Parish, Louisiana, which are producing from a 7,400-7,500-foot horizon.

The Texas Company's new gasser is a rank wildcat, being the first test drilled on the Manvel geophysical prospect. This prospect is about 4 miles west of Pearland, north of Manvel, and is about 17 miles south of Houston. It was discovered by Alexander & Smith in 1928 with the torsion balance and turned to The Texas Company, which holds virtually all the acreage in the area. The well has been drilling continuously over a year, being spudded in early in March, 1930. It was drilled to this sand to a total depth of 7,586 feet last December but stuck drill stem, resulting in a sidetracking job and the drilling of a new hole from 7,182 feet. Another sand was encountered at 5,500-30 feet but in that a drill stem showed salt water and a small amount of gas.

In testing the present sand a one-string casing and screen job was set, six joints of 4¾-inch screen being set on the bottom of the 4¾-inch casing. The well blew in with drill stem in the hole.

Daily Average Production

Daily average production for the Gulf Coast fields for the week ending March 28 follows:

TEXAS COAST

Allen	14
Barbers Hill	21,440
Batson	1,004
Big Creek	3,203
Blue Ridge	1,136
Brenham	50
Boling	720
Clay Creek	2,268
Damon	656
DeWalt	11,817
Esperson	2,882
Fannett	512
Goose Creek	4,474
Hankamer	2,186
High Island	656
Hull	6,127
Humble	9,569
Lost Lake	291
Markham	169
Moss Bluff	595
Mykawa	491
Nash	268
North Dayton	635
Orange	1,918
Orchard	1,714
Pierce Junction	9,904
Port Neches	1,447
Raccoon Bend	8,977
Refugio	28,731
Rockland	8
Saratoga	955
Sour Lake	2,056
South Liberty	2,408
Spindletop	10,990
West Columbia	4,263
Total Texas Coast	144,534
Week ended March 21	142,062
Increase	2,472

LOUISIANA COAST

Anse La Butte	60
Bayou Blue	105
Bayou Bouillon	134
Black Bayou	802
Edgerly	520
Jennings	845
Hackberry	2,858
Iowa	260
Lake Barre	1,964
Lake Pelto	102
Lockport	4,562
Port Barre	3,267
Sorrento	37
Starks	772
Sulphur	1,700
Sweet Lake	1,036
Vinton	6,168
White Castle	986
Total Louisiana Coast	26,228
Week ended March 21	25,746
Increase	482
Total Gulf Coast	170,762
Week ended March 21	167,808
Increase	2,954

FILL SHORT GAP AT BARBERS HILL DOME

HOUSTON, Tex., Mar. 30.—Another short gap in production on the west flank of the Barbers Hill Dome has been filled in by the completion of Yount Lee Oil Co.'s No. 1 Winfree, 847 feet from the south line and 732 feet from the east line of the W. D. Smith Survey. With 174 feet of screen set at 5,495 feet, the well came in flowing 1,250 bbls. of pipe line oil with 600 pounds pressure through a three-eighths-inch choke. This is one of a series of good wells which has been completed, proving so far a line of production over 2,500 feet long on the extreme west, not including the pools on the extreme northwest and the southwest. Offsetting this well to the east, Humphreys Corp. is rigging up for No. 5 E. H. Winfree, 854 feet from the south line and 50 feet from the west line of the tract. Eight additional tests now are drilling in the west flank pool.

On the south side of the dome, Yount Lee Oil Co.'s No. 18 Chambers, William Bloodgood Survey, was completed flowing 690 bbls. daily, 320 pounds pressure, on a three-eighths-inch choke. This well set 62 feet of screen in sand at 4,465 feet, underlying the cap rock and salt overhang. The well is on the extreme inside of the circle of production. A total of 1,625 feet of salt from 1,758-3,383 feet was passed through.

Yount Lee Oil Co.'s No. 16 Chambers, same area, was brought in flowing 330 bbls., 460 pounds pressure, on a quarter-inch choke from sand at 5,293 feet but sanded up and late in the week was being cleaned out to set inside screen.

The Texas Company's No. 1 Williams, on the extreme southwest flank, tested salt water at 6,965 feet and has been abandoned. It apparently was too far out from the dome. Mills Bennett Production Co.'s No. 5 Higgins, William Hodge Survey, southeast flank, also tested salt water and was abandoned at 5,270 feet. The latter company's No. 1-B E. W. Barber finally has been completed as a small well in sand at 5,294-5,320 feet. The well is in sand underlying the salt overhang and is 100 feet east and 75 feet south of No. 3 E. W. Barber, the two wells being in wildcat territory approximately 2,500 feet from the nearest production.

DEEP DRILLING RECORD FOR THE GULF COAST

HOUSTON, Tex., Mar. 30.—A new deep drilling record for the Gulf Coast was being made late in the week by Yount Lee Oil Co.'s No. 9 Housierre-Latrielle, southeast of the Jennings Field, Acadia Parish, Louisiana, which was drilling in shale below 8,800 feet. This exceeds the former depth record set on the coast by The Texas Company's No. 5 Rayne heirs, same area, which was abandoned at 8,730 feet.

These wells are in the same vicinity as Yount Lee Oil Co.'s Nos. 6, 7 and 8 Housierre-Latrielle, which until this week when The Texas Company got gas at 7,590 feet at Manvel in Brazoria County, Texas, held the record of having been the deepest producers on the Gulf Coast. Production in those wells was between 7,400 and 7,500 feet.

Including Yount Lee's No. 9 Housierre-Latrielle and The Texas Company's No. 5 Rayne heirs, six tests have been drilled below 8,000 feet on the Gulf Coast, these being Yount Lee Oil Co.'s No. 4 Crowley, northeast of Jennings, 8,250 feet; this company's No. 4 Chambers, south side of Barbers Hill, 8,148 feet; Mission Drilling Co.'s No. 1 Moss-Heard (Block 111), Refugio, 8,120 feet, and Benedum & Trees' No. 1 Foley, south of Humble, 8,181 feet.

GULF COAST FIELDS AND WILDCATS

Week Ended March 28
All Rotary

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Prod. Co.'s No. 1-B Barber, north	Comp. flowing by heads 250 bbls.; sand 5,294-5,320 ft.
Mills Bennett Prod. Co.'s No. 5 Higgins, southeast	Set screen 5,270 ft.; swabbing salt water; abandoned.
Mills Bennett Prod. Co.'s No. 2 Gulf-Fisher, Wm. Bloodgood Sur., 400 ft. from S line and 50 ft. from W line lease (workover)	Oil sand 5,223-42 ft.; cmtd. csg. and screen.
Mills Benett Production Co.'s No. 1 Wilburn, H. Griffith Sur., 1,545 ft. from W line and 47 ft. from N line (workover)	Rig up to deepen 5,035 ft.
Humphreys Corp.'s No. 2-B Barber, north	Drlg. sandy lime 4,666 ft.
Humphreys Corp.'s No. 2 Wilburn, southeast	Drlg. sandy shale showing oil 5,048 ft.
Humphreys Corp.'s No. 1 Lula Barber, west flank, W. D. Smith Sur., 50 ft. from N line and 50 ft. from E line of tract	Drlg. hard lime 5,038 ft.
Humphreys Corp.'s No. 1 E. H. Winfree, west flank, W. D. Smith Sur., 50 ft. from S line and 75 ft. from W line of tract	Drlg. sandy lime 4,534 ft.
Humphreys Corp.'s No. 2 E. H. Winfree, west flank, W. D. Smith Sur., 50 ft. from W line and 478 ft. S line 10-acre tract	Drlg. sandy lime 4,095 ft.
Humphreys Corp.'s No. 3 E. H. Winfree, west flank, W. D. Smith Sur., 264 ft. from S line and 50 ft. from W line of 10-acre tract	Drlg. lime 4,087 ft.
Humphreys Corp.'s No. 4 E. H. Winfree, west flank, W. D. Smith Sur., 50 ft. from W line and 617 ft. from S line 10-acre tract	Drlg. surface formation 100 ft.
Humphreys Corp.'s No. 5 E. H. Winfree, W. D. Smith Sur., 854 ft. from S line and 50 ft. from W line	Derrick.
McAlbert Oil Co.'s No. 3 Woodward, east flank	Rig standing.
Rio Bravo Oil Co.'s No. 2 Fisher, west flank	Rock 4,201 ft.; losing returns.
Sun Oil Co.'s No. 3 Chambers, south	Drlg. shale 4,408 ft.
Sun Oil Co.'s No. 4 McKinney, east flank, Wm. Hodges Sur., 100 ft. W of No. 3 and 40 ft. from N line of tract	Drlg. sand 6,169 ft.
Sun Oil Co.'s No. 1 Smith, west	Drlg. shale 5,235 ft.
Sun Oil Co.'s No. 14 Wilburn fee, east	Drlg. salt 2,568 ft.; top salt 1,447 ft.
The Texas Company's No. 1 Williams, southwest	Hard sand showing oil 6,965 ft.; cmtd. 4½-in. csg. 32 ft. blank and 74 ft. screen on bottom; drld. plug and tested salt water; abandoned.

(Continued on Page 100)

PROSPECT AT GUEYDAN ABANDONED FOR TIME

HOUSTON, Tex., Mar. 30.—Pure Oil Co. has abandoned temporarily its No. 1 Southwest Louisiana Land Co., first test drilled on the Gueydan geophysical prospect in Vermillion Parish, Louisiana. The test is in a dry sand with brittle shale at 6,594 feet. A few slight shows were encountered in drilling test but otherwise the test was disappointing. This test is 300 feet out of the NE cor., Section 4-12s-1w. The prospect was discovered by Pure although part of the acreage is held by Humble Oil & Refining Co.

QUIT BRAZORIA TEST; WORK OVER DISCOVERY

HOUSTON, Tex., Mar. 30.—Mills Bennett Production Co.'s No. 2 Random, southeast side of the Allen Dome, Brazoria County, has been abandoned in heaving shale with drill stem stuck at 5,308 feet. This test drilled through cap rock and salt from 1,190 to 1,822 feet. Following abandonment of this test, Mills Bennett Production Co.'s No. 1 Poole, south side of the dome, has been rigged up to work over and screen is being pulled. The latter, discoverer of the "Overhang" at Allen, was completed last October flowing 1,540 bbls. from a sand at 4,374 feet but failed to hold up.

PRODUCTION EXTENDED ON NORTH OF HANKAMER

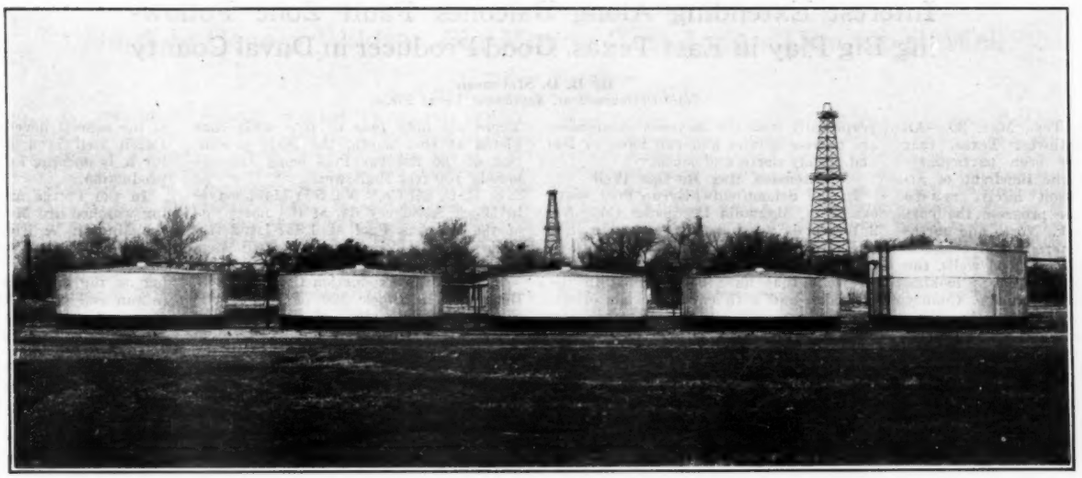
HOUSTON, Tex., Mar. 30.—Production on the north end of the Hankamer Field, southern Liberty County, was extended another 500 feet east by Gulf Production Co.'s No. 12 Boyt, which came in flowing at the rate of 1,500 bbls. daily on a half-inch choke from a total depth of 4,345 feet. Pressure of the well is 375 pounds. Production has been pinched down to within production requirements. The well is the most northeasterly producer in the field.

GOOD DEEP PRODUCER NORTH OF LOCKPORT

HOUSTON, Tex., Mar. 30.—Vacuum Oil Co.'s No. 9 Bordages, 319 feet north and 90 feet east of the SW cor. NW NE Section 8-10s-9w, over a mile northwest of the main Lockport Field, Calcasieu Parish, Louisiana, was brought in the middle of the week flowing 1,250 bbls. of pipe line oil with an estimated 1,000,000 feet of gas through a three-eighths-inch choke. Production is from a deep sand at 6,525 feet with one joint of 6⅝-inch screen in

(Continued on Page 107)

Now—above all times—oil producers are faced with the necessity for eliminating all unnecessary waste



One 750-Bbl. and four 500-Bbl. Maloneys on the Wright Lease, Valley Center, Kans.

High production costs make more apparent the NET PROFIT in using Maloney VAPOR-PRESSURE Tanks to eliminate the waste caused by breathing » » » » » » » » »

The more it costs to drill and operate a well, the more obvious is the need for saving *all* the oil after it is produced. Our *Vapor-Pressure* Tanks enable you to do this. They prevent breathing from reducing the gravity and volume of oil in lease storage and thus make it possible for you to realize the maximum income from your production.

These tanks are made of 12-gauge or heavier Keystone Copper Steel, with heavy 2″ angle ties and reinforcements, efficient valves set at 16-oz. pressure and 2-oz. vacuum, and high grade aluminum paint.

MADE OF KEYSTONE AMERICAN

There are many leases on which this construction would save enough oil, even at present prices, to pay for the tanks in a short time.

"Alone in Quality"

MALONEY TANK MFG. CO.
108 N. Peoria Ave., Tulsa, Okla.
Distributers at All Principal Petroleum Points
Packed in Steel-Bound Crates for Export

MALONEY

Greater Activity in Southwest Texas

Interest Extending Along Balcones Fault Zone Following Big Play in East Texas. Good Producer in Duval County

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Mar. 30.—All the spots over Southwest Texas, that have been particularly in the limelight of attention lately, made some progress the past week. North and northwestern Duval completed some good wells, the Pettus area is looking better, Nueces County threatens another deep pool, and Carsil Oil & Gas Co. got the casing set in their tamed wildcat in northern Jim Wells. Also the Balcones Fault zone from San Antonio northwest is picking up some new interest due to the East Texas play and the possibility that the line of production from the Darst Creek and Bruner Fields may run off more to the northeast and have some connection with the East Texas proposition, rather than more northerly to the Mexia district.

In northern Duval County the S. R. C. Oil Co. and Vacuum Oil Co.'s No. 4 Duval County Ranch Lands reported last week as likely to make a well is in and started off flowing at the rate of about 600 bbls. of oil a day. It later began making about 10,000,000 feet of gas and the company started building a separator. It is now pulling the liner and will deepen the test a little to see how much sand there is present and also in an effort to get more oil and less gas.

It will be remembered that several dry holes were drilled in that part of the country after the operators had brought in their discovery well. The discovery well was the first test drilled within several miles of the location and made about a 300-bbl. well. Dry holes were drilled northeast, southwest and east and the No. 4 was drilled 300 feet west and is a better well than the discovery well. It topped the sand at 1,728 feet which is a little higher than in the discovery well and the indications now are that the pool lays to the west and that the discovery well was an east edge proposition. If the new pool follows the general lines of the Schoolfield-O'Byrne Pool which is located 8 miles east and 4 miles south of the new pool it will not be more than a half mile wide. Many other pools in the Laredo district located geographically near the Reynosa escarpment are narrow affairs and run more or less and mainly north and south.

Extension May Be Gas Well

In the Schoolfield-O'Byrne Pool south extension, Magnolia Petroleum Co.'s No. 2 Wilson is waiting for cement but it is likely to be a gas well. Total depth is 2,368 feet. It is due south of the two oil wells that have been drilled in the extension and with two gas wells offsetting the extension on the west this new well, if it turns out to be a gasser, will sort of dampen the idea of the pool extending south any farther. It is located three-quarters of a mile south of the discovery well.

Frasher & Schoolfield's No. 2 Bishop Duval Land Co. is down 500 feet and drilling. It is located between the discovery well on the north and the Magnolia's No. 2 Wilson on the south, the No. 2 Wilson being approximately 2,000 feet south of the discovery well.

Because it is so deep the Humble Oil & Refining Co.'s No. 50 Kohler, standing at 5,595 feet while repairing the rig, is worth watching. It is in Survey 164 of Duval County, 160 feet east of the center of the west line of the survey and near the north end of the Kohler Pool where production is had at around 1,750 feet, both gas and oil. The only thing reported from the well is salt water at 1 860-87 feet.

J. W. O'Byrne's No. 1 Weil in Survey 568, half way between the Kohler production on the south and the Schoolfield-O'Byrne Pool on the north is down nearly to the sand and below 2,000 feet. It has been checking up pretty well and there is an expectation that it will make a producer and open up a new pool.

Laredo District

There were no producers completed in the Laredo district alst week other than the S. R. C. Oil Co. and Vacuum Oil Co.'s No. 4 Duval County Ranch Lands, but two other tests were in process of being completed as producers at the close of the week and the Claypool and Nickson's No. 3 Garza at the south end of the Escobas Pool in Zapata County reported as a producer a week ago is flowing 130 bbls. of oil a day and one of the best wells completed in the district in the new sand at 1,405 feet total depth. There are only four or five wells completed at that depth, the main production of the Escobas Pool being approximately 100 feet shallower.

S. R. C. Oil Co.'s No. 5-D Montemayor in Block 8, Survey 64, at the north end of the Escobas Pool at 1,337-1,492 feet made a lot of gas through drill stem tester but is being deepened.

South Texas Production Co.'s No. 4 S. Benavides in Block 320 of the Myrtle E. Hale Subdivision of the Mariano Arispe grant in sand at 1,704 feet tested gas. It is in the western edge of the Cole gas field and in the eastern edge of Webb County. It seems to extend the 1,700-foot sand quite a little to the west.

SOUTHWEST TEXAS

Bexar County	350
Branyon	23
Bruner	12,397
Buchanan	96
Chapman	4,030
Dale	288
Darst Creek	28,815
Goliad County	80
Kingsville	122
Larremore	15
Luling	9,202
Lytton Springs	732
Manford	150
McMullen County	20
Medina County	22
Minerva	404
Mirando district	13,175
Normana	35
North Pettus	277
Pettus	6,525
Saxet	159
Somerset	1,388
S. R. C.-Vacuum	294
Thrall	35
White Point	38
Yoast	180
Total	78,852
Week ended March 21	83,317
Decrease	4,465

Corpus Christi Area

Carsil Oil & Gas Co.'s No. 1 McGill in the northwestern part of Jim Wells County got casing set late last week and should be ready to be brought in the last of this week or the first of next at total depth 2,689 feet. It is 18 miles from nearest production and that is the shut in well of J. E. Walsh and the Larcro Gas & Petroleum Co. in northeastern Jim Wells County which opened a new pool a few months ago at 2,916 feet. It is 25 miles from the Cartwright gas field in southeastern Live Oak County which is the nearest developed production. The Carsil well is a might important well for it is opening an entirely new line of production.

In the Pettus area the two wells being watched are Maudlin's No. 1 fee and the Mauldin & Fisher's No. 1 Kimball. Mauldin's No. 1 fee at the southwest corner of the townsite of Pettus had casing on the ground at last reports ready to run and it should be in the hole and cemented and ready to drill in by the end of this week unless delayed. It is 3,874 feet deep and is a little shallower than production in the townsite pool.

Mauldin & Fisher's No. 1 Kimball is 7 miles west of the Pettus Townsite and is 300 feet south of Grayburg's No. 1-A Kimball which made all told several hundred barrels but was finally abandoned. The Mauldin & Fisher well showed 175 pounds pressure and some oil on a drill stem test in sand at 3,536-39 feet which is about the depth of the Grayburg well. It is now waiting for casing and will set and test.

The close of the week may see a further 1,000-foot east extension of the Pettus-Ray-McKinley Pool. United Production Co.'s No. 35 Ray was last reported at 3,950 feet and it is 1,000 feet east of the No. 34 Ray which made an oil well at 3 954 feet and is the farthest east producer in the pool. No. 36 Ray which is due to extend production north and No. 33 which is due to extend production south have made only a little hole so far.

Nueces County

In Nueces County the Saxet Oil Co.'s No. 7 Dunn is ready to drill the plugs at 4,296 feet. It is 2,000 feet northwest of the same company's No. 6 Dunn which was the discovery deep oil well of the Saxet Field at 4,290-4,304 feet. The No. 7 was first drilled to the shallower sands a few years ago and was a failure. It has since been deepened to the newly discovered sand.

The two wells on the Dunn lease are on the south edge of the shallow gas sand. The company is deepening its No. 4 Dunn in the field which was completed a few years ago at 2,321 feet for about 20,000,000 feet of gas.

Three tests west of the Saxet Field are all on sand and about ready to com-

(Continued on Page 107)

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location—	Remarks:
Cullen and Boren's No. 1 Medina Irrigation, W. Klemke Sur. No. 439	T. D. 2,267 ft.; shut down.
Pacific Oil & Gas Co.'s No. 1 Harris, G. Van Norman Sur.	T. D. 672 ft.; running 5 3-16-in. csg.

BLANCO COUNTY

H. L. Lewis' No. 1 Glasscock, moving in to drill on leases out of the Rodson block north of Blanco City	T. D. 500 ft.; shut down.
Hardy-Sitton's No. 1 McMillan	T. D. 720 ft.; drlg.
Lies-Adams et al's No. 1 Stanford, 150 ft. to S line, 1,420 ft. to E line of James Stanford's No. 155	T. D. 952 ft.; fishing.
McCleary et al's No. 1 Schenling, 900 ft. to SE line, 600 ft. to S line of J. A. Rouse No. 118 Sur., 4 miles SW from Blanco City	T. D. 562 ft.; shut down.
J. R. Meek's No. 1 Walker, 360 rds. from W line, 482 rds. from S line of 375-ac. tract in Sur. No. 32	T. D. 1,025 ft.; fishing.
Page et al's No. 1 Cox, Rutersville College Sur. No. 18	Spudded and shut down.
G. Rosenfield's No. 1 Hohenberger, 800 ft. to W line, 1,350 ft. to N line, Sur. No. 94	T. D. 712 ft.; shut down.

BASTROP COUNTY

Majestic Pet. Co.'s No. 1 J. M. Breeding, 160 ft. from N line, 1,020 ft. from W line of 200-ac. tract, 240 varas from W line, 1,325 varas from S line of M. Andrews Sur., 19 miles W from Smithville	T. D. 375 ft.; standing.
Turner-Whorton and Anderson's No. 1 Harris, Joshua Gray Sur.	T. D. 1,300 ft.; drlg.

BELL COUNTY

Mildon Oil Co.'s No. 1 J. K. Edds, Maxiano Moreno Sur.	T. D. 519 ft.; drlg. shale.
O. O. Alford and others' No. 2 F. Spankell, W. Woodford Sur.	T. D. 500 ft.; shut down.
J. W. Riley et al's No. 1 J. W. Mosely, Maxiano Moreno Sur.	T. D. 1,190 ft.; shut down; reinstated.

BROOKS COUNTY

Ed East's No. 3 B. Garcia, 150 ft. from N and W lines of Blk. 5, Share A-1, Las Mastena y Gonzalene grant	T. D. 1,002 ft.; standing.

(Continued on Page 97)

SOUTHWEST TEXAS PROVEN AREAS

DOBROWOLSKI POOL—BEXAR COUNTY

Company, farm and location—	Remarks:
Morgan Bros.' No. 3 Masterson, 300 ft. S of No. 2 Masterson, Miguel Gortaris Sur.	T. D. 550 ft.; set csg.
Collins and Morris' No. 10 Halberdier, J. M. F. Perez Sur.	T. D. 410 ft.; drlg.
Boling & Michael's No. 1 Adams, Miguel Gortaris Sur.	T. D. 700 ft.; (W.O.).
F. H. Eckert's No. 10 Dobrowolski, 400 ft. from W line, 150 ft. from S line of lease, Sur. No. 52	Location.
I. L. Dingman's No. 1 W. F. Gembler, Juan Montez Sur.	T. D. 517 ft.; drlg.
Gatlin Oil Co.'s No. 6 Beck, Juan Montez Sur.	T. D. 300 ft.; drlg.
W. S. Rogers et al's No. 1 L. Donnop, Juan Montez Sur.	T. D. 300 ft.; drlg.
A. J. Swearingen's No. 6 Sandemer, 600 ft. S of No. 1, M. Manchaca Sur.	Location.
A. J. Swearingen's No. 7 Sandemer, 300 ft. S of No. 6, M. Manchaca Sur.	Location.

BRUNER POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, A. Floyd Sur.	T. D. 50 ft.; spudded and shut down.

EDDINGTON POOL—FALLS COUNTY

Eddington et al's No. 3 Llewellyn, George Allen Sur.	T. D. 610 ft.; drlg. shale.

DARST CREEK FIELD—GUADALUPE COUNTY

Gulf Prod. Co.'s No. 16 T. Dix, J. R. Robinson Sur.	T. D. 2,578 ft.; comp. 1,305 bbls.
Humble Oil & Ref. Co.'s No. 23-A Denman	T. D. 2,548 ft.; comp. 800 bbls.
Humble Oil & Ref. Co.'s No. 24-A Denman	Location.
Magnolia Petroleum Co.'s No. 1 M. E. Roamel, J. Robinson Sur.	T. D. 2,408 ft.; cementing cavings.
W. R. Posey's No. 1 Knodle, J. R. Robinson Sur.	Rigging up.
Magnolia's No. 8 Rand Miller, Alexander Sur.	T. D. 2,425 ft.; drlg.
Simms Oil Co.'s No. 5 Manford, James Hodges Sur.	T. D. 2,627 ft.; drlg.
Sun Oil Co.'s No. 1 Dowdy, J. C. Darst Sur. No. 9	T. D. 2,598 ft.; putting on pump.
Sun Oil Co.'s No. 14 Knoblock, midway between Nos. 9 and 2, J. W. Robinson Sur.	T. D. 2,570 ft.; comp. 720 bbls.

CHAPMAN POOL—WILLIAMSON COUNTY

Collins et al's No. 8 Lawrence, S. Miller Sur.	Rigged up.
Chapman et al's No. 2 Lawrence, S. Miller Sur.	Derrick.
Chapman et al's No. 7 Fuchs, S. Miller Sur.	T. D. 700 ft.; drlg.
Vitex Oil Co.'s No. 8 Kilgore, Simon Miller Sur.	T. D. 1,735 ft.; waiting on cement.

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Deep Test on Rangely Dome Assured

New Operation to Be Started in Otero County, New Mexico. Gas in Harding County Wildcat. Big Muddy Test Looks Like Good Well

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Mar. 31.—The Shell Pipe Line Co. increased its nomination for oil from the Hobbs Pool to 11,000 bbls. daily and allowable outlet for last half of March was placed at 32,532 bbls. daily. One new location for the Hobbs Pool was made by the Midwest Refining Co. The Atlantic Oil Producing Co.'s No. 1 Coleman in the Eunice Pool gauged 1,194 bbls. in 24 hours and will be shot. Harding County wildcat which had a show of gas at 287 feet, continues to attract some attention. A new operation for Otero County is to be started within 90 days. R. D. Compton's No. 3 Brainard, west of the Artesia Pool in Eddy County averaged 250 bbls. daily when opened for three days recently.

The Rangely Dome in Rio Blanco County, Colorado, will be tested down to the Tensleep in a rotary operation to be drilled by the California Co. The Midwest Refining Co. completed a 100-bbl. well in the Sundance on the Iles Dome. The MacDeb Drilling Co.'s No. 1 Fitzsimmons, near Denver, is making new hole below the recent showing of oil. The Jones test in Baca County has a hole full of salt water.

Ohio Oil Co.'s test to the Lakota sand in the Big Muddy Field in Wyoming swabbed 250 bbls. in eight hours and looks like a good well. The Midway Dome test is nearing the top of the Dakota formation, but is troubled with cavy ground.

Montana is being swept by a snow storm and little progress was reported in any of the wells drilling.

NEW MEXICO

A new proration schedule for the Hobbs Pool was issued on March 17 by Umpire C. G. Staley to replace the one in effect on March 16 due to the Shell Pipe Line Co. increasing its nomination to 11,000 bbls. per day effective at 7 a.m., March 16. The new schedule places the potential production at 1,122,965 bbls. daily from 142 wells on 122 units and the allowable outlet for the last half of March was set at 32,532 bbls. daily.

New Mexico Pipe Line Co., which is affiliated with Continental Oil Co., will resume the running of oil from the Artesia Field through its 4-inch line to the Continental refinery at Artesia on April 1. This line was leased to and operated by Illinois Pipe Line Co. when it entered the Artesia area. Last fall Ohio Oil Co. withdrew as a purchaser of Artesia crude but the Illinois company continued to transport Artesia oil to the refinery and also some of the Caprock production from that field to the railhead. The New Mexico company again takes over the operation of the line under the new arrangement.

Hobbs Pool—Lea County

A new location in the Hobbs Pool was announced this week by Midwest Refining Co. in its No. 26 Capps, C SE SW, Section 3-19-38, in the southeastern part of the field, the first in a number of weeks. It is an offset on the north to the same company's No. 11 Thorpe. The footage is 660 feet from the east and south lines of the southwest quarter. Gypsy Oil Co.'s No. 7 Grimes, SE NE NW, Section 32-18-38, is bottomed at 3,945 feet and is bailing to test after drilling out the cement. The 7-inch was cemented 3,860 feet. Western Drilling Co.'s No. 1 State, C SW NE, Section 15-18-37, is waiting for completion of water well.

Eunice Area—Lea County

Atlantic Oil Producing Co.'s No. 1 Coleman, SW NE NW, Section 17-21-36, which extends the Eunice Pool one-third of a mile to the northwest, gauged 1,194 bbls. of oil in 24 hours, the first gauge for that period made. The total depth is 4,015 feet. It was plugged back to 3,943 feet and is preparing to shoot. It topped the pay at 3,860 feet. California Co.'s No. 1 Meredith, SE cor. NE, Section 19-21-36, is drilling at 3,723 feet in lime after stopping to cement the 7-inch at 3,700 feet. This well, which is one-third of a mile south of Getty Oil Co.'s No. 1 State, a producer, and 1½ miles north and east of Continental Oil Co.'s No. 1 Lockhart, the pioneer well in that district, had considerable gas in upper horizons, the last important gas being at 3,483-93 feet. Continental Oil Co.'s No. 3 A. E. Meyers, NW SE NW, Section 17-21-36, an offset on the south to Atlantic Oil Producing Co.'s No. 1 Coleman, is building rig.

Caprock Area—Lea County

Western Drilling Co.'s No. 1 Bridges, SE cor. NW, Section 17-17-34, which showed for a commercial well at 4,688 feet, is drilling below 5,000 feet without encountering another break in the lime.

Jal Area—Lea County

Leonard & Levers' No. 1 Justis, C SE NE, Section 19-25-37, is bottomed at 365 feet in the red beds and is fishing for slip.

Lovington Area—Lea County

Western Drilling Co.'s No. 1 State, NE cor. SE, Section 13-17-36, is drilling at 1,887 feet in red rock. The 10-inch was cemented at 1,885 feet.

Harding County

The Harding County wildcat being drilled by Kummbaca Oil & Gas Co., formerly referred to as the Milwaukee Syndicate, in its No. 1 Kerline, NW cor. SE, Section 34-21-30, Ute Creek Buttes district, continues to attract attention to that area. Reports brought back by effect that it is shut down at 287 feet in the 20-inch pipe. It had a show of noninflammable gas in red sand at 285-87 feet, the quantity being estimated at 500,000 to 1,000,000 feet. The pressure is being held down by 150 feet of water run into the hole. The Wingate formation outcrops at the Ute Buttes and the gas sand is believed to be the Santa Rosa. The gas has a sharp odor like ammonia. E. D. Kerns, who has done considerable development in the Seven Lakes district in McKinley County, owns the rig and is in charge of the drilling. A Milwaukee syndicate composed mostly of doctors is reported to have financed the test.

Otero County

A new operation in Otero County is to be started within the next 90 days by the Paso Terry Oil Co. which has made a location for its No. 1 Dexter, C SW NW, Section 22-24s-12e. The test was promoted by N. W. Evans, of Artesia, who sold a spread of 21,000 acres to California interests. There are surface indications of an anticlinal fold with a northwest-southeast trend and 100 feet of closure. The only other operation in that county is E. H. Ernest and others' No. 1 Ernest, SE cor., Section 20-25-7e, in the Hueco district, which was last reported shut down at 1,004 feet for tools.

Eddy County

Considerable interest is attached to a report on the showing made recently in R. D. Compton's No. 3 Brainard, SW SE SE, Section 5-18-27, west of the Artesia Pool and 2½ miles east of the Pecos River, when it was opened for a three-day test. During that period it was reported to have averaged 250 bbls. per day. The well was completed last October in the pay at 1,259-60 feet and from the 1 foot of sand made 70 bbls. scouts who visited the well are to the the first 24 hours. After the recent test it was again shut in as all storage on the lease was full of oil. The showing made in this well indicates that a nice pool may be developed in that area. Oil Well Drilling Co.'s No. 1 Baker, SE NE NE, Section 21-21-26, in the Carlsbad area, is drilling at 245 feet in lime and had a show of dead oil at 240-45 feet.

Mora County

Fulton Petroleum Co.'s No. 1 Santa Fe-Dioice Co., NE cor., Section 14-19-21, Wagonmound district, is spudding. This is an operation intended to open a carbon-dioxide gas supply for the manufacture of dry ice.

Chaves County

R. T. Neal and others' No. 1 Russell, SW NW NW, Section 21-14-25, Hagerman district, is drilling at 1,742 feet (corrected measurement) in black lime. Warman Oil Trust's No. 1 Seibert, NE, Section 27-13-24, Blackdom district, is drilling at 2,290 feet in gray lime.

Rio Arriba County

Governardo Dome Oil Co.'s No. 1, SE, Section 15-29-7w, is reported drilling at 865 feet and carrying the 8¼-inch.

San Juan County

Continental Oil Co.'s No. 24, SW cor. NW, Section 1-29-19, Rattlesnake Dome, which has been delayed at a total depth of 4,730 feet since last January when the rotary drill pipe stuck, has cemented to 3,300 feet and will try to drill by. R. C. Oswell's No. 2, NW, Section 34-30-11, between Aztec and Bloomfield, is rigging up. Reserve Oil Co.'s No. 3, NW, SE SE, Section 36-22-14w, Stoney Butte, is drilling at 645 feet. San Juan Leaseholds Co.'s No. 3 Bowman, NW NE, Section 30-30-15, Meadows district, is drilling at 2,645 feet. Rio Grande Development Co.'s No. 2 Lanier, SE cor. NW, Section 9-29-11, Bloomfield district, which has been shut down at 1,280 feet after cementing the 6⅝-inch since last July, is reported moving in supplies and preparing to resume.

COLORADO

The long heralded deep test on the Rangely Dome in Rio Blanco County, near the Utah boundary in western Colorado, which has been discussed at intervals for several years past, was assured this week when deals were completed whereby the California Co., subsidiary of Standard Oil Co. of California, will undertake the drilling operation. A complete rig and outfit which will include some features new to this territory will be shipped in from California at once and spudding will begin probably by June 1, the date being dependent in part upon weather conditions. The main objective of the test will be the Weber sandstone of the Pennsylvanian series of Carboniferous age. This formation is the equivalent of the Tensleep of Wyoming and has never been drilled in western or northwestern Colorado. The new operation will be known as California Co.'s No. 1 California-Raden, NW SE, Section 30-2n-102.

The Rangley Dome is one of the largest and best defined structures in Colorado and has been explored for oil at frequent intervals since 1901 when the Poole well was drilled in the SE NW, Section 33-2n-102. It was nitended as a test to the Dakota, but reached a depth of only 2,-130 feet. Attention was attracted to the area previous to that time by an oil seep near the corners of Sections 5, 6, 7 and 8-1n-102. During the past 30 years many wells have been drilled on the structure, but only five of these reached the sands in the Dakota formation and two of these tested all horizons down to the Nugget, or Sundance formation. There are a few shallow wells on the structure producing high gravity oil from sandy lenses in the Mancos shale at 500 to 600 feet. Texas Production Co. drilled its No. 1 Emerald, SW SW, Section 30-2n-

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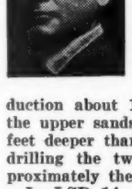
CENTRAL TURNER VALLEY TEST TO DEEPEN AFTER FAIR GAS FLOW

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Mar. 28.—In the Central Turner Valley Field, British Dominion Oil & Development Corp.'s No. 3, LSD 6, Section 12-20-3w5, got a fair wet gas flow 93 feet in the deep lime at 5,295 feet. The flow is reported between 2,000,000 and 3,000,000 feet, and the test is deepening. British Dominion's No. 2, same LSD, got its main production about 120 feet in the lime. In the upper sands No. 3 logged about 350 feet deeper than No. 2, but with deeper drilling the two tests have logged approximately the same.



In LSD 14, same section, Illinois-Alberta Oils' No. 1 is underreaming near the bottom of the old hole, and will likely drill a little deeper into the lime. It has some gas production.

McLeod Oil Co.'s No. 3, LSD 16, Section 1-20-3w5, is reconditioning. This test had a fair production in the lime, but owing to considerable lost iron the hole plugged. It is now deepening below the old bottom with indications of better production.

Richfield Petroleums' No. 2, LSD 12-13, Section 13-20-3w5, is reported through the Dalhousie sand and drilling in the pokerchip shales at 4,680 feet, and will cement in the top of the lime. The test has a fair wet gas flow from the upper horizons.

Dome Oils' No. 2, LSD 16, Section 36-19-3w5, is drilling close to the Madison lime at 5,070 feet, with casing set at 5,000 feet. There is about 3,000 feet of light crude in the hole, this coming from the Dalhousie sand. Dome's No. 2 is testing a new area south of the Okalta acreage, and a producing well would add considerably to the proven area.

Spring Coulee

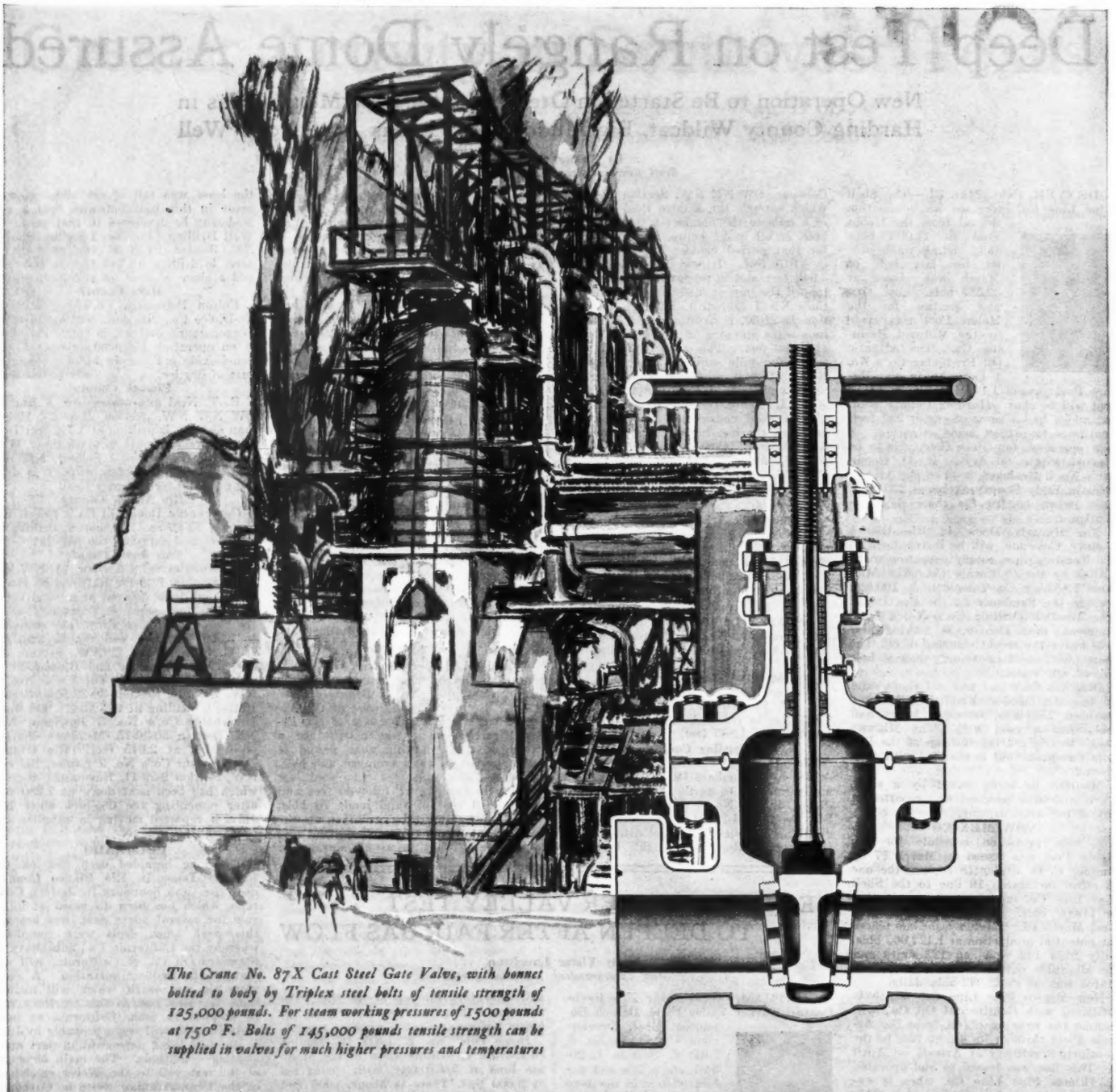
Alberta Pacific Consolidated Oils' No. 1, Section 15-4-23w5, in the Spring Coulee district, southern Alberta, has encountered oil and gas in the top of the Madison lime at 5,934 feet. The oil tested 28 gravity. Drilling will be carried into the lime and it is expected the test will get the equivalent of the Turner Valley producing zone inside 150 feet.

On the Alberta end of the Reserve Dome, Mayland Southern's No. 1, LSD 13, Section 4-1-9w4, is reported practically rigged up, but spudding in has been delayed. The test is expected to be under way in April. Location is a mile north of the Alberta-Montana boundary, on a structure which has developed large gas production on the Montana side.

Hudson's Bay Tests

In the Keho Lake district, Hudson's Bay Oil & Gas Co.'s No. 1 Keho, LSD

(Continued on Page 89)



The Crane No. 87X Cast Steel Gate Valve, with bonnet bolted to body by Triplex steel bolts of tensile strength of 125,000 pounds. For steam working pressures of 1500 pounds at 750° F. Bolts of 145,000 pounds tensile strength can be supplied in valves for much higher pressures and temperatures

CRA

PIPING MATERIALS TO CONVEY AND CONTROL STEAM, LIQUIDS, OIL, GAS, CHEMICALS

California Crude Situation Unstable

Further Price Change Announced by Union Oil. Curtailment of Refinery Operations Reduces Market for Raw Material

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Mar. 28.—Conditions in California continued unsettled during the past week, both crude and refined oil markets reflecting the existing unstable situation. There has been a general weakening in curtailment work, although most operators continued to adhere rigidly to the conservation program which has been in effect for more than a year. The situation has been complicated to some extent, however, because of the inability of operators to dispose of current production resulting from the retrenchment of major refiners who have been carrying too heavy a burden for the past few years. Cancellation of crude oil purchase contracts has left a number of producers without a market for current production, with the result that a number of wells have of necessity been shut down. The existing low prices paid for crude oil will probably result in a further suspension of production activities in view of the fact that the lifting cost in many instances is in excess of existing crude oil price schedules.

Crude oil prices were reduced first on March 10 and again on March 15 with the result that operators have not yet begun to feel the effects of these reductions in prices. The Union Oil Co. has announced a further reduction effective March 30. Tangible evidence of the decreased income will be visible on and after April 10 when buyers of crude oil begin mailing out checks in payment for crude oil purchased during the month of March. Even these low prices, however, should be considerably in excess of the amount received by operators for crude oil delivered to the Richfield Oil Co. and other concerns on a co-operative marketing basis. Richfield is reported to have paid on the basis of approximately $1 per barrel during February but the severe uneconomic gasoline price war which has existed during the month of March will probably result in a drastic reduction in the net return to producers for oil sold during March. Refiners estimate that approximately 75 per cent of their income results from the sale of gasoline. If this condition prevails with the Richfield Oil Co., the net back to producers will be unusually small inasmuch as there is certainly not much profit in the sale of gasoline on a tank wagon price of 7½ cents, which, incidentally, includes the state gasoline tax in California of 3 cents per gallon. Fuel oil has held fairly steady during the past month and this should compensate in part for the decreased revenue resulting from the sale of gasoline. This reference to the Richfield Oil Co. is not made by way of criticism but merely to call attention to the unsettled condition resulting from overproduction. The question arises, however, as to the position which will be taken by producers if the net back on March oil is substantially below lifting costs. Producers affected by these contracts must either suspend production activities or continue operating at a loss as they will probably not be in a position to negotiate contracts with any of the other major companies which are at present buying in excess of their current requirements. As the situation stands at present, producers and refiners are both operating at a loss, at least in most cases.

Sales Agency Organized

The California Oil Producers Sales Agency, recently organized by a number of independent operators, hopes to effect some degree of stabilization in the near future. This new association, which is expected to begin functioning shortly, will recommend an immediate reduction of State production to 500,000 bbls. per day and its contracts with producers will give it sufficient authorization to regulate the amount of oil which each member may sell monthly. Present plans contemplate the placing of all current production not already under contract in a general pool to be handled by the board of control and allocated on a pro rata basis to be determined by each operator's actual and potential production when and as market requirements permit. The price per barrel is to be determined by the market demand based on a gravity schedule as at present but sufficiently flexible to permit the determination of prices on a daily basis instead of on a fixed schedule as at present. The board of control will have absolute control of all oil, and, while the association will not own any pipe lines or storage facilities, it will have indirect jurisdiction over lease tankage.

Articles of incorporation for the Oil Producers Sales Agency have been filed at Sacramento and it is the present intention to put the association on an operating basis as soon as possible. Nominations for the board of directors, which will consist of 21 members, include W. M. Keck, Superior Oil Co.; R. R. Templeton, Pacific Western Oil Co.; J. B. Dabney of the Dabney-Johnston Oil Corp.; R. M. Blodgett, George F. Getty, Inc.; A. T. Jergins of the A. T. Jergins Trust; R. A. Broomfield, Barnsdall Oil Co.; A. C. Mattei, Honolulu Consolidated Oil Co.; Charles S. Jones, Rio Grande Oil Co.; Ed McAdams of the Rohde & McAdams Oil Co.; R. E. Collom, Continental Oil Co.; R. M. Sands, Petroleum Securities Co.; J. J. Doyle of the Doyle Petroleum Co.; Neal Anderson; Hooper Dunbar; Alphonso Bell; John B. Elliott; S. A. Guiberson; C. C. Spicer; Ralph B. Lloyd; C. A. Johnson; Dana Burke; R. O. Bush; Burton Green; R. Bixby; and C. B. Watson of the Milham Exploration. The next week or 10 days will probably be taken up by organization meetings, during which time the legal department will be occupied in the drafting of a standard uniform contract.

The Kettleman North Dome Association opened its new offices in the Richfield Oil Co. Building at Sixth and Flower Streets in Los Angeles during the early part of the past week. Personnel of the new organization has not yet been completed, although several appointments have already been made. C. L. Clark, who has been with the Shell Oil Co. for 10 years as head of the foreign employment department, has been appointed chief petroleum engineer of the Kettleman North Dome Association. Taber Mahler and C. B. Kimberlin have been appointed chief field engineer and production supervisor, respectively. Both were previously in the employ of the Shell, the former as mechanical engineer for a period of five years and the latter in the production division. W. B. Thomson, a member of the auditing department of the General Petroleum Corp., has been appointed auditor of the North Dome Association. Chester Inman has been selected as field superintendent, being particularly qualified for this position by his previous service as field superintendent for the Shell Oil Co., with which concern he has been affiliated for a period of approximately 15 years. The Kettleman North Dome Association has already ordered the drilling of five new wells and the completion of several other projects which have been standing suspended on top of the pay since it started functioning. The association, which contemplates the erection of adequate storage facilities in the North Dome and the laying of pipe line facilities throughout the field, is expected to make a number of other appointments in the near future, as the first of its new wells should be on production shortly.

Playa Del Rey

Daily production of the Playa Del Rey Field showed a slight reduction during the past week and a further decline is expected. Drilling operations have been reduced to a minimum due to partial conclusion of development work, financial difficulties encountered, the existing low price paid for crude oil and the difficulty being experienced in disposing of current production. A check indicates that there are only 18 incompleted drilling projects under way at the present time, and, while several more holes are being started, drilling operations will continue to decline. There are 49 wells suspended in the Playa Del Rey Field at the present time, most of which never produced any oil due to being unfavorably located or the depleted condition of the oil sands in which they were situated. The Pacific Shore Oil Co. successfully completed No. 4 Dey Rel during the early part of the week flowing 322 bbls. of clean 23.4 gravity oil per day from 6,192 feet. This new well was finished with a 6⅝-inch water string landed at 5,923 feet and a 4¾-inch liner including 275 feet of perforated. The

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	.....	77,405
Fuel oil	.....	.....	.....	.....	.....	71,950
Diesel and gas oil	.....	.....	72,755	10,394	679,024	1,140,597
Gasoline	358,395	51,199	404,514	57,788	3,442,526	4,141,600
Coastwise—						
Crude oil	739,873	105,953	629,687	89,955	4,532,463	3,382,844
Fuel oil	328,133	46,876	148,467	21,210	3,675,581	4,123,275
Diesel and gas oil	42,312	6,045	7,021	1,003	395,113	520,756
Gasoline	.....	.....	363,957	51,994	2,480,964	2,511,145
Kerosene	20,526	2,932	9,943	1,420	106,471	18,714
Exports—						
Crude oil	149,467	21,352	81,030	11,576	1,569,779	1,656,739
Fuel oil	33,682	4,812	178,899	25,557	3,257,766	4,005,133
Diesel and gas oil	64,937	9,277	38,784	5,541	809,999	1,295,384
Gasoline	96,749	13,821	98,526	14,075	2,128,765	3,548,292
Kerosene	68,610	9,801	20,771	2,967	305,814	847,497
Lubricants	.....	.....	6,928	990	6,928	5,057

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	88,280
Gasoline	.....	.....	.....	.....	63,975	285,245
Lubricants	.....	.....	.....	.....	11,000	.....
Coastwise—						
Fuel oil	74,400	10,629	62,940	8,991	925,298	688,871
Diesel and gas oil	6,911	973	3,010	430	15,134	73,676
Gasoline	73,661	10,523	25,008	3,573	565,868	1,057,884
Kerosene	.....	.....	6,952	993	23,829	93,814
Exports—						
Crude oil	.....	.....	.....	.....	6,010	3,075
Fuel oil	.....	.....	135,266	19,324	198,876	122,143
Diesel and gas oil	1,481	211	12,980	1,854	127,617	124,540
Gasoline	183,502	26,215	120,939	17,277	710,363	837,230
Kerosene	.....	.....	.....	.....	190,412	162,499

MORE COMPLETIONS IN THE EAST THAN FOR PAST SEVERAL MONTHS

By Staff Correspondent

PITTSBURGH, Pa., Mar. 30.—During the week in the eastern fields, a greater number of completions was reported than for several months, and the majority were gassers. A total of 34 wells was completed, of which 24 were gas wells, 5 dry holes, and 5 oil producers with an initial production of but 33 bbls.

There were few fair wells reported in southeast Ohio. In Athens County, Nezum and others completed a test on the August Brechtel farm in Section 3, Canaan Township, showing for 150,000 feet of gas a day from the Second grit at a depth of 1,415 feet. In Alexander Township, the A. H. Heisey Co. completed a test on the Charles E. Chase farm in Section 8 in the same sand and at a depth of 1,479 feet. It was dry.

In Jefferson County, Peters & Co. drilled a test on the James Clark farm, Section 23, Island Creek Township, to a depth of 1,400 feet and in the Berea sand. It is 800 feet west of some light gas wells but turned out to be a dry hole. In the NE of Section 1, Jackson Township, Noble County, Frank Worral and others completed a test on the J. B. Hutchinson farm in the Berea grit at 1,543 feet. It is showing for a very light gas well estimated at 23,000 feet a day.

In the shallow sands of Medina County, there were three completions, two of which were fair. On Lot 6, Section 13, Chatham Township, E. R. Edson & Son Co. completed their No. 12 on the Archie E. Packard farm at 368 feet, the Cow Run sand, and it produced 15 bbls. the first day after shot. The same operators completed their No. 14 on the M. A. and Eva Franks farm, Lot 20, Section 16, Chatham Township at 477 feet. It made 3 bbls. the first 24 hours after shot. In the same section and lot, the Preston Oil Co. drilled No. 3 on the Ira Cleveland farm to a depth of 460 feet and it is showing for 12 bbls. a day after shot.

Drilling in Ohio

The deep test of the Benedum & Trees Co. on the Wayne Coal Co. tract in Section 26, Island Creek Township, Jefferson County, has now passed the 4,700-foot level. This well is scheduled to go to 6,000 feet or deeper unless interrupted by production. The Clinton sand has been drilled through, likewise the Medina sand. In Cross Creek Township, Elliott & Co. are down to 500 feet on the J. M. Elliott farm, Section 18.

Coshocton County is active with several tests drilling. In Perry Township, George M. Oxley farm, Section 25, the Preston Oil Co. reported a test completed as a gasser which proved to be

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Ohio Oil Co. completed the flow test conducted on No. 4 Recreation undertaken for the purpose of establishing the well's potential daily production. This project, originally completed flowing 2,500 bbls. per day, upheld the contention of Ohio officials that it was underrated by the umpire.

The Union Oil Co. put two wells on production in the Santa Fe Springs Field of Los Angeles Basin during the past week, both of them being recompletions. No. 39 Bell was finished in the Nordstrum zone at 5,356 feet and registered an initial on gas lift of 375 bbls. per day, the oil testing 32.5°. No. 35 Bell, completed in the O'Connell zone after being redrilled and deepened to 6,578 feet, was returned to production flowing 1,010 bbls. of unusually clean 35.1 gravity oil per day. This former upper zone producer was recompleted with a 6⅝-inch water string set at 6,271 feet and a 4¾-inch liner including 248 feet of perforated. The Union is drilling one other well in the Santa Fe Springs Field at the present time while the General Petroleum is rigging up No. 37 Santa Fe, which will be redrilled and deepened from the Bell zone to one of the lower productive horizons.

Huntington Beach

Leasing activities in the town lot area along the ocean front have brought the Huntington Beach Field into the limelight again after a dormancy of more than a year. The cause for this renewal of work is due to the probable discovery of a new deep zone by the Superior Oil Co. This new horizon was encountered several months ago, and, while it has not yet yielded any oil, it is reliably reported to be exceptionally promising. The Union Oil Co. stepped into the town lot section this week and acquired several drill sites. During the early part of the week, in anticipation of a deep sand drilling campaign, the company purchased in fee four lots at the southwest corner of Seventeenth and Walnut Streets and a few days later purchased three lots on Seventeenth between Walnut and Olive from Arnold Griese. Both of these acquisitions are in close proximity to the Superior Oil Co.'s deep zone discovery. The Superior's discovery well, incidentally, is still standing suspended at 7,648 feet, although a 4¾-inch liner carrying 175 feet of perforated was run in several months ago preparatory to completion whenever deemed advisable. W. E. McCaslin's No. 17 Transport was rotating ahead a few days ago in a hard brown shale at 7,450 feet. This well, located in close proximity to the Superior's discovery, has a 4½-inch water string landed and cemented at 6,887 feet. The water string on the Superior's No. 1 Fee, the discovery well, is a 4¾-inch combination job cemented through perforations at 7,473 feet. The Superior is deepening two other wells in the town lot section at the present time and a check indicates the probability that a number of other wells will be started down to the deep zone in the near future by various other operators. The Wilshire Oil Co. has already been granted permission by the State Mining Bureau to redrill and deepen six former upper zone producers, and preliminary preparations are already under way. The Barry Oil Co., Baldwin Oil Co. and Powell & Farris are also working on projected deep zone wells.

West Coyote Field

The Standard Oil Co. is running five strings of tools in the West Coyote Field in the Los Angeles Basin at the present time, and, while this amount of work might ordinarily be expected to increase field production, such will not be the case in this instance, as the Standard is doing this drilling in order to keep drillers on the payroll and at the same time explore the 99 and other zones underlying the present productive horizon. The Brea Canyon Oil Co.'s deep test in the Fullerton, or Brea Olinda Field, is rotating ahead in a gray sand at 6,085 feet. The Shell Oil Co.'s deep test at Dominguez, No. 3 Childs, cored a hard black shale at 7,498 feet. No. 7 Manuel in this field has been suspended at 8,922 feet and it is not likely that the Shell will do any further work for the present. Rosenberg & Robbins have not yet resumed drilling operations in their projected deep test, No. 7 Monrovia, in the Inglewood Field of Los Angeles Basin. This well was carried down to 4,656 feet before being temporarily suspended a few weeks ago pending the outcome of a survey job to determine the amount of deviation from the vertical and a recheck of geological data. The Wilshire Oil Co. has not yet started its test well on the Potrero Gun Club lease in the Potrero Field of Los Angeles Basin, with the result that there is only one well, Wilcox & Schirm's No. 1 Townsite, being drilled at the present time. A new well is being started in the Richfield district and this project, E. C. Johnson's No. 1 Irwin, is the first hole to be started in this area for several months.

Elwood

Crude oil production of the Elwood Field of Santa Barbara County, which has been considerably in excess of the allowable daily production of 29,000 bbls., has been cut back to within striking dis-

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GOOD GAS COMPLETION AT MUSKEGON STARTS ACTIVITY DEEPENING WELLS

By Paul A. Elliott

MUSKEGON, Mich., Mar. 28.—At present natural gas is of greater interest and value to the operators as well as to the communities in which activities are centered. The Johnson Oil Refining Co. brought in its deepened No. 2 Ludwig Heinz, SW NE, Section 9-10n-16w, Muskegon Township, which after a shot at 2,198 feet was completed at 2,215 feet with an open flow capacity of 260,000 feet. The Johnson company, the Lima Oil Corp. and the Muskegon Oil Corp. are now contemplating deepening several wells to the Monroe.

The Muskegon Oil Corp. has started deepening its No. 2 Stanley Danilloff, SW SW, Section 5-10n-16w, Muskegon Township.

Seven former producers, mostly Dundee oil wells in the old congested area of Section 5, Muskegon Township, either have been plugged during the past two weeks or will be plugged. Two structure test wells also have been plugged. They are as follows: Consolidated Oil Co.'s No. 1 Jacob Host, SE SE, Section 5-10n-16w, Muskegon Township; Victor Oil & Gas Co.'s No. 1 C. Bensinger, NE SE, Section 5; Manitou Oil Co.'s (E. B. Strom) No. 1 Jacob Host, SE SE, Section 5; Holland Oil & Gas Co.'s No. 1 Jack Joslyn, NE SE, Section 5 (Robinson-Westlund); Kooiker-Victor's No. 1 Joslyn, also NE SE, Section 5; Nelson and Witt's No. 2 F. J. Gates, SW NE, Section 11-10-17, Laketon Township; two structure tests of the Reed Oil Co., No. 1 A. Sparre, SE NW SW, Section 9-11n-17w, and No. 1 C. L. Bullock, S half NE, Section 15-11n-17w, both in Fruitland Township, and the Ohio Producers & Refiners' (East Ohio Gas & Oil Co.) No. 1 Mrs. Eva D. Malone, NW SE, Section 12-10n-17w, Laketon Township. The Ohio company also plans to plug and abandon two other former producing Dundee oil wells on this lease.

Mount Pleasant

Gibson, Johnson & Borden (now the

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IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-33	5,930	fishing
Fields Gas Co., No. 1 Santa Maria, Santa Barbara Co.	8- 9-33	5,570	suspended
Barnsdall, No. 1 Gato Ridge, Santa Barbara Co.	9- 8-32	6,170	sd. sh. drilling
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-33	1,800	suspended
neral Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas—shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	gas—shut in
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	4,650	aespe form.
General Pet., No. 134 Goleta, Santa Barbara Co.	21- 4-28	1,485	suspended
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	2,047	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	suspended
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	4,931	suspended
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	2,051	suspended
General Pet., No. 143 Goleta, Santa Barbara Co.	21- 4-28	1,040	suspended
Boles Oil Co., No. 140 Goleta, Santa Barbara Co.	22- 4-28	1,040	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	1,032	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	1,035	suspended
Sunset Pacific, No. 1 Goleta, Santa Barbara Co.	12- 4-29	480	abandoned
Southern Calif. Drlg. Co., No. 1 Goleta, Santa Barbara	12- 4-29	mtl.	building rig
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	4,191	recemented
Caldwell Brown, No. 159 Goleta, Santa Barbara Co.	24- 4-29	1,100	redrilling
Johnson, George, No. 1-A Goleta, Santa Barbara Co.	19- 4-27	1,010	sd. sh. drilling
Prairie Oil Co., No. 1 Capitan, Santa Barbara Co.	32- 5-30	4,380	abandoning
Cuyama Oil Corp., No. 1 Cuyama, Santa Barbara Co.	12-10-27	rig	suspended
Hart Pet. Co., No. 1 Cuyama, Santa Barbara Co.	27-10-26	rig	suspended
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	5,500	suspended
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
C.C.M.O. Co., No. 2-A Rincon, Ventura Co.	23- 3-24	8,855	br. sh. drilling
Continental, No. 1 Rincon, Ventura Co.	23- 3-24	1,560	cleaning out
Associated, No. 1 Fillmore, Ventura Co.	16- 4-20	....	material
Pure Oil Co., No. 1 S. P. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Superior Oil Co., No. 1 Sespe, Ventura Co.	14- 4-21	6,024	sd. sh. drilling
Lockwood Valley Oil Co., well No. 1, Ventura Co.	32- 8-21	1,015	suspended
Magu Synd., No. 1 Oxnard, Ventura Co.	17- 1-21	1,780	hd. sd. drilling
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	sd. sh. drilling
Kent & McDonald, No. 1 Temblor Hills, Kern Co.	3-32-22	1,672	suspended
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	26-31-24	5,367	cleaning out
General Pet., No. 1 Belridge, Kern Co.	30-28-21	3,916	br. sh. drilling
The Texas Company, No. 1 Belridge, Kern Co.	22-27-20	5,075	sd. sh. drilling
Standard, No. 2 Belridge, Kern Co.	31-27-20	5,045	cleaning out
Ohio Oil Co., No. 1 Belridge, Kern Co.	36-27-20	5,934	cemented
Reward Oil Co., No. 1 Belridge, Kern Co.	34-27-20	4,506	sd. sh. drilling
Union, No. 17 Belridge, Kern Co.	36-27-20	5,541	recemented
Continental, No. 1 Belridge, Kern Co.	36-27-20	1,009	sd. sh. drilling
Casa Mira Oil Co., No. 1 Belridge, Kern Co.	29-28-20	rig	suspended
Tom Cannon, No. 1 Belridge, Kern Co.	18-28-22	rig	suspended
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,220	sd. sh. drilling
Rio Cal. Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	suspended
Wicker, Sy, No. 1 Arvin, Kern Co.	12-30-28	1,250	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	7,900	hd. sd. drilling
Shell, No. 2 Weed Patch, Kern Co.	29-30-29	-6,075	sd. sh. drilling
Shell, No. 3 Weed Patch, Kern Co.	32-30-29	4,578	sd. sh. drilling
Osborn-Colter, No. 1 Weed Patch, Kern Co.	15-30-29	mtl.	building rig
Mohawk Oil Co., No. 1 Weed Patch, Kern Co.	32-30-29	5,966	redrilling
Mohawk Oil Co., No. 2 Weed Patch, Kern Co.	4-31-29	480	sd. sh. drilling
Alpine Oil Co., No. 1 Weed Patch, Kern Co.	13-31-29	606	cemented
Standard, No. 1 Devils Den, Kern Co.	14-25-18	2,682	br. sh. drilling
Hannon, Tom, No. 1 Devils Den, Kern Co.	25-25-18	2,860	br. sh. drilling
Langstroth, F. B., No. 1 Blackwell Corner, Kern Co.	14-26-19	mtl.	building rig
E. J. Miley, No. 1 Blackwell Corner, Kern Co.	17-26-19	mtl.	building rig
Shell, No. 1 Semitropic, Kern Co.	17-27-23	9,700	cleaning out
Cities Service, No. 2 Wasco, Kern Co.	16-28-24	702	core hole
C.C.M.O. Co., No. 1 Jasmine, Kern Co.	31-28-25	2,550	to abandon
Moran & DeCamp, No. 1 Mojave, Kern Co.	26-10-14	750	suspended
Meridan Oil Co., No. 1 Antelope, Kern Co.	11- 9-15	2,804	suspended
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	5,530	suspended
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	4,390	br. sh. drilling
Carruthers Oil Co., No. 1 Fresno, Fresno Co.	4-17-20	rig	suspended
Miracle Oil Co., No. 1 Cuyama, San Luis Obispo Co.	17-10-25	314	suspended
Panorama Oil Co., well No. 1, San Luis Obispo Co.	7-31-21	4,019	redrilling
Tray El Oil Co., No. 1 Carizzo, San Luis Obispo Co.	7-32-22	1,205	cleaning out
Latin Amer. Pet., No. 1 Shandon, San Luis Obispo Co.	21-27-15	4,525	suspended
Continental, No. 1 San Miguel, San Luis Obispo Co.	26-25-11	4,963	hd. sd. drilling
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	24-28-12	916	suspended
Martin, J. D., No. 1 Edna, San Luis Obispo Co.	5-31-13	3,010	suspended
Schockley, C., No. 1 Pismo, San Luis Obispo Co.	13-32-13	2,530	suspended
Pacific Inland, well No. 1, Monterey Co.	19-23-15	1,100	hd. sd. drilling
Brown, F. A., No. 1 Parkfield, Monterey Co.	15-25-14	816	suspended
Irma Investment Co., No. 1 Dudley Ridge, Kings Co.	7-23-20	rig	rigging up
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,635	gas well—idle
Valley Expl. Co., No. 1 Dudley Ridge, Kings Co.	30-23-20	3,750	testing
Kettleman Lakeview, No. 1 Tulare Lake, Kings Co.	11-23-19	1,304	suspended
Purman, T. H., No. 1 Reef Ridge, Kings Co.	36-23-17	2,574	suspended
Seymour, L. W., No. 1 Avenal, Kings Co.	10-23-16	1,148	suspended
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	6,400	sd. sh. drilling
Orinda Pet., well No. 1, Contra Costa Co.	32- 1- 3	1,960	hd. sd. drilling
Pettingall, C. E., No. 1 Porterville, Tulare Co.	15-22-27	516	sd. sh. drilling
Knapp, George, No. 1 Porterville, Tulare Co.	20-22-27	491	sd. drilling
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,092	cleaning out
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15- 4	850	hd. sd. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 2-10	4,110	hd. sd. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	2,501	sd. sh. drilling

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Olympic Realty Corp., No. 1 Barnes, Los Angeles Co.	14- 2-15	5,050	sd. sh. drilling
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	4,540	sd. sh. drilling
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,238	suspended
Mesmer City Corp., No. 1 Mesmer, Los Angeles Co.	24- 2-15	3,848	sd. sh. drilling
Dwyer & Becker, No. 1 Compton, Los Angeles Co.	17- 3-13	4,520	suspended
Allison Synd., No. 1 Baldwin, Los Angeles Co.	8- 2-14	5,110	suspended
Cal, Ventura Oil Co., No. 1 Manhattan, Los Angeles Co.	30- 3-14	6,525	suspended
Cal. Ventura Oil Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,396	suspended
Cal. Ventura Oil Co., No. 2 Hermosa, Los Angeles Co.	31- 3-14	3,300	suspended
Cal. Oilfields Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	2,314	sd. sh. drilling
Corniel Oil Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,314	suspended
Hermosa Expl. Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	471	sd. drilling
Westwood Pet., No. 1 Hermosa, Los Angeles Co.	6- 4-14	2,020	sd. sh. drilling
Talsa Oil Co., No. 1 Hermosa, Los Angeles Co.	6- 4-14	393	sd. drilling
Thorpe Pet. Co., No. 1 Hawthorne, Los Angeles Co.	10- 3-14	2,860	sd. sh. drilling
McMahon & McDonald, No. 1 Watts, Los Angeles Co.	12- 3-14	4,665	suspended
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	780	suspended
Shelley, C. M., No. 1 Torrance, Los Angeles Co.	12- 4-14	rig	suspended
York & Smullin, No. 1 Watson, Los Angeles Co.	29- 4-13	2,514	sd. sh. drilling
Mack Oil Co., No. 1 Chatsworth, Los Angeles Co.	6- 2-16	rig	suspended
Brubaker, W. O., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	cleaning out
San Van Oil Co., No. 1 Van Nuys, Los Angeles Co.	14- 1-16	2,124	recemented
Rucker & Croul, No. 2 Puente, Los Angeles Co.	27- 2-10	2,000	sd. sh. drilling
Arden Oil Co., No. 1 Puente, Los Angeles Co.	15- 2-10	3,325	suspended
D. & B. Oil Co., No. 1 Puente, Los Angeles Co.	3- 2-10	4,620	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	1,092	suspended
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	3,100	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,370	sd. sh. drilling
The Texas Company, No. 1 Montebello, Los Angeles Co.	4- 2-12	2,600	hd. sd. drilling
Huntington Cent. Oil, No. 1 Montebello, Los Angeles Co.	34- 1-11	mtl.	building rig
Celito Oil Co., No. 1 Monterey Park, Los Angeles Co.	28- 1-12	5,278	suspended
Hammer, Fred, No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,413	suspended
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	2,280	suspended
Rancho Oil Co., No. 1 Rosemead, Los Angeles Co.	30- 1-11	5,096	sd. sh. drilling
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	5,695	to abandon
Nesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Hall, H. L., No. 1 Newport, Orange Co.	20- 6-10	790	suspended
Gesell, T. F., No. 1 Newport, Orange Co.	29- 6-10	1,396	sd. sh. drilling
Standard, No. 1 Newport, Orange Co.	26- 6-10	4,060	hd. sd. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,519	suspended
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	4,490	cleaning out
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 8- 8	5,250	suspended
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,393	suspended
Western Gulf, No. 1 Santa Ana, Orange Co.	12- 3- 8	2,502	hd. sd. drilling
The Texas Company, No. 1 Olive, Orange Co.	7- 4- 9	3,711	sd. sh. drilling

Smith County Gets Its First Producer

Joiner and Farrell-Lathrop Pools Extended. Test on Western Side of Gregg County Causes Flurry. Magnolia Posts Prices

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Mar. 30.—Extensions and possible extensions, larger wells and wells with greater volume of gas, and five days of arguments over proration of the new fields in Gregg and Rusk Counties, gave the entire oil fraternity, especially operators and producers and those interested in the new producing areas, plenty to maintain their interest and keep them busy studying the magnitude of these new fields which look almost sure to be linked into one vast pool, and its following effects upon the entire industry.

After five days of discussion, arguments and examinations, which almost terminated in fisticuffs, at Austin this week it was recommended that the Railroad Commission curtail the daily allowable of Gregg and Rusk Counties, including the newly added well in eastern Smith County, to 50,000 bbls. beginning with April 1, increasing the daily allowable 5,000 bbls. the first of each month thereafter until the maximum of 70,000 bbls. is reached in September. An order is expected to be issued by the Railroad Commission placing these counties under proration with the rest of the State. But it is not believed that all operators in the new counties are to stand by these orders and many cases are expected to be instituted in the courts, although many operators with wells now on production have signified their intention of abiding by proration, and many have been in favor of it. Although one case has been won in a lower court by the Railroad Commission against a company which sought a permanent injunction to prevent the commission from interfering with the company in producing its leases to capacity, other test cases will probably be instituted in these areas in the near future.

One Complaint Filed

One complaint has already been filed with the commission in behalf of the Federated Oil Co. against the Humble Oil & Refining Co. The Humble company is producing two offset wells to a Federated well in the Kilgore Field, northern Rusk County, the Federated company not having any connection to its well while the Humble has its own gathering lines and loading rack and is taking its own crude from the two wells. This suit will be filed to determine the merits of the common purchaser act which is now over a year old, and whether it applies to pipe lines which run to loading racks as well as lines connecting with trunk lines which are in the main owned by major companies.

This test case will be exceptionally interesting, and although it cannot be brought to trial soon enough to affect the present situation in Gregg and Rusk Counties, it nevertheless will have much influence on later proration, and the building of lines into the areas. If the common purchaser act is sustained and regarded by the courts as applicable equally to trunk lines and short gathering lines connected to loading racks or refineries it will affect the whole pipe line situation in the three pools, compelling all of the short lines serving the pools to take ratably from all producers.

Magnolia's New Schedule

The Magnolia Petroleum Co. cast a glow of encouragement over the new producing areas of Gregg and Rusk Counties this week when it posted prices which average above the prices now being paid for crude being purchased in the Joiner and Kilgore Field. Thirty-eight to 38.9 gravity crude was placed at 63 cents per barrel by the company, 39-39.9 gravity crude will bring 65 cents and 40 gravity and above will bring 67 cents per barrel. These prices went into effect March 26 and the company explained its move by stating that crude of similar gravity was bringing higher prices in other places, and there was no reason for high gravity crude from these fields bringing such low prices.

The average price now being paid for East Central Texas crude is 45 cents while some crude has been contracted at 35 cents and even 25 cents has been reported paid for some of the oil. Gravity of the crude from the Gregg and Rusk Pools runs from 38 to 40 degrees.

Smith County Well

Smith County, long desirous of obtaining production, and lying directly between the producing counties of Van Zandt and Gregg and Rusk, was rewarded Sunday, March 29, when Guy Lewis and others' No. 1 Cooke, in the J. Jordan Survey, blew in making 97 bbls. the first 18 minutes flowing open for 5 minutes and on three-quarters-inch choke the other 13 minutes. It also made 137 bbls. the first 33 minutes through three-quarters-inch choke into the tanks, the casing pressure testing 375 pounds, and the well making a reported 7,000,000 feet of gas, one of the largest gas producers in the field. Total depth is 3,696 feet. Saturated sand was cored from 3,674 feet to the bottom of the hole.

This well extends production another 1½ miles farther west and north from Demonstrend and others' No. 1 Bridwell completed last week for better than 500 bbls. per hour. This well extended production over 2 miles west, and is near the Rusk-Smith County line.

Joiner Extension

McMillan's No. 1 Thompson, in the southwest corner of the farm which is located in the J. Darley Survey, 1½ miles northwest of production in the Joiner Pool, Rusk County, proved another extension to the pool, but in the direction toward the Kilgore Pool. This test cored saturated sand from 3,642-76 feet, 3,680-3,700 feet and broken sand and shale from 3,700-07 feet. It had cored enough sand to prove a producer, before casing was cemented and plug drilled, and when drilled in it flowed 605 bbls. the first hour adding weight to the theory that the Joiner and Kilgore Pools will eventually be linked into one field by producing wells.

Northwest of Kilgore

Byrd and others' No. 1 Elder, in the J. W. McCrory Survey, northeast of Kilgore, was abandoned as a dry hole, and Brandon and McCamey abandoned their test on the Richards farm, 1 mile east of Kilgore. When the sand encountered at 3,509-24 feet was tested it showed a little oil, but not enough to prove a producer, consequently it was abandoned as dry at a total depth of 3,574 feet. The test topped the Georgetown at 3,554 feet.

Lloyd Oil Corp.'s (Elliott) No. 1 Andrews in the W. F. Hyde Survey, 1½ miles northwest of Kilgore in Gregg County, is still shut down with casing cemented at 3,623 feet. This test cored sand at 3,642-52 feet and means another extension to the Kilgore Pool as soon as it is drilled in, which will probably be within the week. This will extend production in the direction of the Gregg County Pool.

Heep Oil Co.'s No. 1 Bean in the J. Lewis Survey, one-quarter of a mile east of production in the Kilgore Pool, cored saturated sand from 3,634-45 feet and ran casing to 3,565 feet. This gives another slight extension to the pool to the east which has already been defined by the test on the Richards farm. The western limits have not been defined yet, and the two tests drilling to the northwest of Burton Oil Co.'s producer on the Florey farm will be closely watched for indications of other western extensions.

Most Important Test

The Selby Oil & Gas Co.'s test on the Snavely farm in the William Tyndale Survey, 1½ miles southeast of Gladewater in Gregg County, now appears as the most important test of the three producing areas of Gregg and Rusk Counties, as it practically proves a 6-mile western extension of the Farrell-Lathrop Pool or the discovery of a separate pool in the county. The majority of operators and company men are of the former belief. The test is now shut down with casing cemented. Total depth is 3,583 feet, and it cored 10 feet of sand in all. The first saturated sand was cored from 3,529-36 feet, shale and red beds were cored from 3,536-82 feet and another body of sand was cored from 3,582-85 feet.

This test has created great excitement and a flurry of leases and royalty trading on the western side of Gregg County has been going on since the test encountered the top of the sand on March 25. This will give the Farrell-Lathrop Pool a width of over 7 miles from northeast to southwest.

Mamie Hammond and others' No. 1 Hamby in the Lant Survey, northeast of the Farrell-Lathrop Pool, is drilling in Georgetown topped at 3,674 feet. Intentions are to drill to 3,750 feet and make another test. The test is considered as dry, as is Hurlburt and Brown's test on the Page farm in the Ed Robin-

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EAST CENTRAL TEXAS WILDCATS

Week Ending March 30

CHEROKEE COUNTY

Company, well, farm name, section and block—	Remarks:
McDonald Bros.' No. 1 Newton, center of 113-ac. tract, Thomas Quevedo Sur., 3 miles N of Jacksonville	Derrick.
R. G. Baker et al's No. 1 M. M. Tommie, 945 ft. N and 1,300 ft. E, William George Sur.	Shut down 4,003 ft.

DELTA COUNTY

Delta Development Co.'s No. 2 Hays Kinney, 300 ft. S of No. 1 Cooper, Townsite Sur.	Drlg. 2,235 ft.
D. S. Hoods' No. 1 J. J. Balser, 185 ft. from S and 580 ft. W of Balser 40-ac. tract in SE cor. T. B. Laddin Sur.	Drlg. 2,650 ft.
Everett Drlg. Co.'s No. 1 Sansivy, 1,320 ft. N and 1,320 ft. W. J. B. Craig Sur.	Coring 3,335 ft.
Worthington and Stedman's No. 1 W. H. Dejehett, 150 ft. from S and 776 ft. from W of 52-ac. tract, E. Chick Sur.	Shut down 2,300 ft.

GREGG COUNTY

Alco Royalty Co.'s No. 1 J. R. Castleberry estate, 150 ft. from N and 1,950 ft. from E of survey	Set 12½-in. csg. 175 ft.
Angle and Bytex' No. 1 C. R. Parker, 510 ft. from N and 150 ft. from E, James F. Dixon Sur.	Building derrick.
Arkansas Fuel Oil Co.'s No. 1 P. D. Harrison, 150 ft. S and 410 ft. E of SW cor. of Tenery 40-ac. tract, William Robinson Sur.	Drlg. 2,896 ft.
Arkansas Fuel Oil Co.'s No. 2 P. D. Harrison, 282 ft. S and 143 ft. E of SE cor. of Tenery 40-ac. tract, William Robinson Sur.	Derrick pattern.
Arkansas Fuel Oil Co.'s No. 2-A F. K. Lathrop, 5,820 ft. from N and 2,800 ft. from W of survey, William Robinson Sur.	Set 6-in. csg. 3,590 ft.
Arkansas Fuel Oil Co. et al's No. 3-A F. K. Lathrop, 1,710 ft. S and 1,518 ft. W of NE cor. of 96-ac. tract, William Robinson Sur.	T. D. 3,608 ft.; waiting on connections.
Crump and Hanagan's No. 1 Dallas Caldwell, 150 ft. from S and N offset to East Texas' No. 1 Fisher, John Ruddle Sur.	Rigging up.
Bell & Graddy's No. 1 M. George (or Daniels), 225 ft. S and 650 ft. W of 26-ac. tract, Mary Van Winkle Sur.	Drlg. 2,719 ft.
W. H. Byrd, Jr.'s No. 1 Art Mitchell, 150 ft. from E and 150 ft. from S of 15-ac. lease, 1,300 ft. from S and 850 ft. from E of survey, John Carithers Sur.	Drlg. 2,385 ft.
D. H. Byrd and Gulf Prod. Co.'s No. 1 Canimaras Bros., 5,505 ft. from NW, 1,528 ft. from NE of 817.6-ac. tract, 1,820 ft. from N, 2,505 ft. from W of survey, Harden Edwards A-64 Sur.	Rig up and shut down.
Cranfill & Reynolds' No. 1 G. L. Rembert Co., 150 ft. from N and 150 ft. from E of 166.5-ac. tract and 86-ac. tract, John Ruddle Sur.	Derrick.
Daisy Oil Co.'s No. 1 Mrs. H. B. Ware, 1,000 varas from N and 350 ft. from W of survey, Avery B. Johnson Sur.	Derrick.
East Texas Refining Co.'s No. 2 Fisher (Rodden), 200 ft. from N and 200 ft. from W of E 148 acres of 198-ac. tract, John Ruddle Sur.	Drlg. 1,320 ft.
Eslick and Little's No. 1 W. R. Nicholson, 1,205 ft. from E and 150 ft. from S of 1,094-ac. tract, Marsh Mann Sur.	Drlg. 1,025 ft.
D. H. Felder's No. 1 Elder (Trip), 200 ft. N and 200 ft. W of Elder tract, J. W. McCorry Sur.	Oil 3,702 ft. in lime.
M. S. Hammond's No. 1 J. M. Hamby, 278 ft. from E line, 1,667 ft. S of Hamby 3,800-ac. tract, Martin Lant Sur.	T. D. 3,707 ft.
Heep Oil Corp.'s No. 1 Barber, 800 ft. from N and 500 ft. from E of survey, William McCurry Sur.	Location.
Houston Oil Co.'s No. 1 J. G. McGrede, 150 ft. from E and 150 ft. from S of 100-ac. lease and W offset to Pilot Oil Co.'s No. 1 McGrede, Dolores Sanches Sur.	Building derrick.
Hudson and McCamey's No. 1 Smith, 150 ft. S and 160 ft. W of W. Smith 43-ac. tract, J. S. Carithers Sur.	Location.
Hunter and Howe's No. 1 Watson, 175 ft. from S and 160 ft. from W of 92-ac. tract, Mary Van Winkle Sur.	Location.
Hurburt and Brown's No. 1 L. L. Mackey, 990 ft. from E and 990 ft. from S of 269-ac. tract, 1,000 ft. from W and 990 ft. from S of survey, G. Y. Chambers Sur.	Shut down 400 ft.
Hurburt and Brown's No. 1 A. J. Page, 1,670 ft. S and 2,080 ft. E of SW cor. of Ed Robinson Sur., James Dixon Sur.	T. D. 3,691 ft.; coring 3,674-90 ft.

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Ward County Most Active in Permian

Bennett Pool May Be Extended. Fishing Job in Andrews County Well. Archer County's Producer May Add Another Horizon

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Mar. 30.—New allowables for the West Texas district as recommended to the railroad commission are as follows: Yates Pool, 89,500 bbls.; Crane-Upton, 18,658 bbls.; Gulf-McElroy, 6,000 bbls.; Ector, 7,000 bbls.; Howard-Glasscock, 27,073 bbls.; Winkler 48,000 bbls.; Big Lake, 20,000 bbls.; miscellaneous West Texas 16,700 bbls. This makes a total of 232,931 bbls. There may be some changes but it is thought the order will be issued as listed.

Ward County continues one of the most active counties in the Permian Basin, with eight tests drilling. The California Co. is drilling one of the most interesting in the vicinity of Texas Pacific Coal & Oil Co.'s No. 1 Barker, a semi-wildcat between the Shipley and Bennett Pools, which promised the linking of the two areas. The California Co.'s test is on the Gordon ranch and is down 2,210 feet in lime. Cable tools are being moved in to supplant the rotary in use to this depth. It is 330 feet from the northeast and southeast lines of Section 6, Block 34, H.&T.C. Survey. Elevation is 2,529 feet. The salt was topped at 1,100 feet.

May Extend Bennett Pool

Kugle and others' No. 1 Wallace, south of the Bennett Pool, was completed for an initial production of 75 bbls. at a total depth of 2,645 feet. Top of the pay was logged at 2,448 feet in this semi-wildcat producer which may prove an extension to the Bennett Pool, but is more likely to open a separate pool of small producing wells. A former test in the area was abandoned several months ago, consequently this well is not hoped to prove much for its immediate vicinity.

Withdrawals from storage increased in West Texas showing the last period from March 11 to March 18 withdrawing 23,970 bbls. per day or an increase of 9,258 bbls. over the pervious period's withdrawals.

Deep Rock Oil Co. and others' No. 1 Kuykendall, in Section 24, Block A-46, Andrews County, which proved a commercial producer last week after given a 600-quart shot, has a fishing job holding it up from completion, although it is heading every six hours making around 150 to 200 bbls. per day. The hole has not been cleaned out to the bottom, and when the fishing job is completed and the hole cleaned out it is believed the well will be good for around 400 bbls. per day, the best well yet completed in the Andrews County Pool, and proving several sections as potential producing acreage.

Cranfill Brothers and Gulf Production Co.'s No. 1 Tubbs, in the western part of Crane County, Section 8, Block B-27, continues to drill and increase in fluid. It is making 150 bbls. per day, 85 per cent basic sediment and water. It is now drilling at 5,250 feet in lime.

PANHANDLE, WICHITA FALLS AND RANGER DISTRICTS

The new allowable of the Panhandle district recommended to the railroad commission for the next six months' proration period, starting April 1, is 35,000 bbls., or near the present amount.

The Wichita Falls district was given an allowable of 59,630 bbls. per day, and the Ranger district 23,447 bbls. per day. These figures are based on the total nominations of the various companies serving the districts with pipe lines.

Operators in the Wichita Falls and Ranger districts were glad to hear that the bill to exempt marginal producing wells from proration had been adopted by the state legislature. This will affect several hundred small producers now shut down or under proration in these two districts, but due to the extremely low price for oil from these districts it may not have come in time to help some of the operators who have been fighting for the existence of their wells and themselves. It was thought many of the wells would have to be abandoned because of prorating them to almost nothing, or unable to obtain connections, and now that the price of crude from these districts has been cut to a point where the operators cannot afford to pump and produce their wells, it would appear the bill came too late to save these wells which have been in desperate straits for many months.

Archer County Well

Completion of the Deep Oil Development Co.'s No. 1 Wilson, in Block 76, A. T.N.C.&L. Survey, Archer County, at a total depth of 2,215 feet, is one of the most important strikes in the Wichita Falls district for the past several months as it opens up that district, especially the area in the immediate vicinity of the well, to the possibilities of other deep producing wells, and add another producing horizon to the county and district.

One hundred feet of open hole is to be cased and tubing set before an actual gauge and test can be made of the well, but many are prophesying it will make around 800 to 1,000 bbls. per day.

WEST TEXAS PRODUCTION
Week Ending March 28, 1931

County—	No. wells	Bbls.
Andrews	3	70
Crane	375	19,307
Crockett	51	1,677
Ector	77	6,075
Fisher	10	758
Garza	0	25
Howard-Glasscock	538	22,519
Irion	7	67
Jones	77	1,326
Loving	39	3,682
Mitchell	111	2,011
Pecos	539	95,030
Reagan	255	26,590
Runnels	5	121
Scurry	5	0
Upton	259	5,148
Taylor	3	149
Ward	56	3,619
Winkler	594	47,617
Total production this week		235,782
Total production last week		231,106
Increase		4,676

COMPLETIONS IN WEST TEXAS

Crockett County

Taylor Link Oil Co.'s No. 1 Bullock, top pay 2,637 feet, total, depth 2,680 feet, plugged back to 2,677 feet, shot with 50 quarts 2,652-77 feet, initial production 61 bbls. on pump.

Loving County

C. H. Lockhart's No. 1 Hubbard, dry and abandoned, total depth 4,220 feet.

Upton County

Gulf Production Co.'s No. 91 McElroy, top pay 2,790 feet, shot with 355 quarts from 2,790-2,970 feet, initial production 520 bbls., total depth 2,970 feet.

Ward County

Gulf Production Co.'s No. 16 O'Brien, top pay 2,587 feet, initial production 147 bbls. per day, total depth 2,670 feet. Kugle and others' No. 1 Wallace, top pay 2,448 feet, initial production 75 bbls., total depth 2,645 feet.

RUNS THROUGH TRUNK LINES

Company, size and location—	Bbls.
Atlantic, 10-inch, Houston	23,833
Gulf, 10-inch, Ranger	1,375
Humble, 2-8-inch, San Angelo	33,288
Humble, 10-12-inch, Comyn	49,395
Illinois, 2-8-inch, Del Rio	37,057
Magnolia, 8-inch, De Leon	25,050
Pasotex, 8-inch, El Paso	9,020
Shell, 10-inch, Healdton	28,804
Shell, 10-inch, Houston	28,715
Texas, 12-inch, Houston	22,113
Total	258,650

RUNS TO WEST TEXAS REFINERIES

Big Spring Ref. Co., Big Spring	6,835
Burford Ref. Co., Pecos	4,224
Cosden Ref. Co., Big Spring	2,334
Col-Tex Ref. Co., Colorado	6,802
Great Western Ref. Co., Big Spring	1,386
Wickett Ref. Co., Wickett	327
Total	21,898

TANK CAR SHIPMENTS

Big Lake from Texon	3,000
Fox and Thorsen from Mertzon	66
Southern Crude from Wickett	12,334
Total	15,400

COMPLETIONS IN NORTH CENTRAL TEXAS

Cooke County

W. B. Hamilton's No. 3 Jacobs, dry and abandoned, total depth 1,580 feet.

Wichita County

T. F. Hunter's No. 3 American Refining Properties, top pay 1,242 feet, initial

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WILDCAT OPERATIONS IN WEST TEXAS

Week Ended March 30

ANDREWS COUNTY

Company, well, farm name, section and block— Remarks—

Deep Rock Oil Co. et al's No. 1 Kuykendall, 2,310 ft. from N and E of SW cor., Sec. 24, School Blk. A-46.. Plugged back to 4,565 ft. and shot 600 qts. 4,252-4,606 ft.; cleaning out and fishing for sand pump.

Deep Rock Oil Co. et al's No. 1 King, 330 ft. from N and 2,310 ft. from E Sec. 11, Blk. A-46 ..... Top pay 4,335 ft.; flows every 4 days; temporarily abandoned; total depth 4,454 ft.

BORDEN COUNTY

George Goodrum's No. 1 Conrad, 725 ft. from N and 950 ft. from W Sec. 90, Blk. 20, La Vaca Navigation Sur... Drlg. 605 ft.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F. Sur. ..... Shut down 1,935 ft.

E. L. Chapman's No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur. ..... Shut down 1,302 ft.

Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur. ..... Total depth 2,800 ft.; shut down.

Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 miles S of Alpine ..... Shut down 1,750 ft.

COKE COUNTY

Reed, Hitchens et al's No. 1 Duncan, 1,980 ft. from S and 1,650 ft. from E of Sec. 239, Blk. 2, H.&T.C. Sur. (4,500-ft. cable test) ..... Shut down 30 ft.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 163, T.&N.O. Sur. ..... Shut down 267 ft.

Betts & Dennis' No. 1 H. E. Woods, 710 ft. from E and 150 ft. from S Sec. 3, H.E.&W.T. Sur. ..... Shut down 80 ft.

Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock ..... Shut down 1,850 ft.

CRANE COUNTY

Cranfill Bros. and Gulf's No. 1 J. B. Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-27, Public School Land ..... Drlg. 5,222 ft.; increase in fluid at 5,135 ft.; tested 45 bbls. fluid in 1 hour, 85 per cent water.

H. H. Sides and others' No. 1 B. P. Nolen, 150 ft. from S and 150 ft. from W of N 160 acres, Sec. 8, Blk. 31, H.&T.C. Sur. ..... Drlg. 60 ft.

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WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending March 30

CARSON COUNTY

Company, well, farm name, section and block— Remarks

Deep Lake Oil Co.'s No. 1 Keys, NE cor. SW, Sec. 1, Blk. 4, I.&G.N. Sur. ..... Spud and S.D.

Interstate Prod. Co.'s No. 1 Coffee, C S½ NW, Sec. 15, Blk. 4, I.&G.N. Sur. ..... S.D. 665 ft.

Krebs & Barnard's No. 1 Barnard, 660 ft. S and W, NW, Sec. 24, Blk. 4, I.&G.N. Sur. ..... Fishing 3,220 ft; estimated 100 bbls. from pay 3,212-18 ft.

North American O. & G. Co.'s No. 1 Burnett, 1,341 ft. S, 662 ft. E. of S E½, Sec. 80, Blk. 4, I.&G.N. Sur. .... Rig.

Plains Holding Co.'s No. 1 M. P. Co. fee, C N 10 ac., N½ NW SW, Sec. 40, Blk. 4, I.&G.N. Sur. ..... Spudded.

Red River Gas Co.'s No. 5-A Bivins, 1,320 ft. S, 660 ft. E, Sec. 45, Blk. B-20, G.&M. Sur. ..... Drlg. 2,249 ft.

The Texas Co.'s No. 1 Schaffer, C SW, Sec. 48, Blk. 4, I.&G.N. Sur. ..... Drlg. 450 ft.

The Texas Co.'s No. 1 Bednarz, 817 ft. S, 172 ft. W, S 100 ac. of SW, Sec. 2, Blk. 4, I.&G.N. Sur. ..... Rigging up rotary.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands ..... T.D. 5,000 ft.

COCHRAN COUNTY

Continental Oil Co.'s No. 1-B Slaughter, 4,950 ft. N and E. of Lge. 134, Armstrong County School lands .... Drlg. 4,195 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur. ..... U.R. 680 ft.

COTTLE COUNTY

Darby Oil Co. and Merry Bros. & Perrin's No. 1 Richards, 330 ft. NE, Sec. 13, B.S.&F. Sur. ..... Drlg. 3,530 ft.

GRAY COUNTY

Adams, Prince et al's No. 1 Morse, 330 ft. NE SE, Sec. 6, Blk. 26, H.&G.N. Sur. ..... Pay 2,905-12 ft; estimated 75 bbls; T.D. 2,512 ft.

Anderson et al's No. 2 Vollmert, 330 ft. N and W, SW, Sec. 140, Blk. 3, I.&G.N. Sur. ..... Rig.

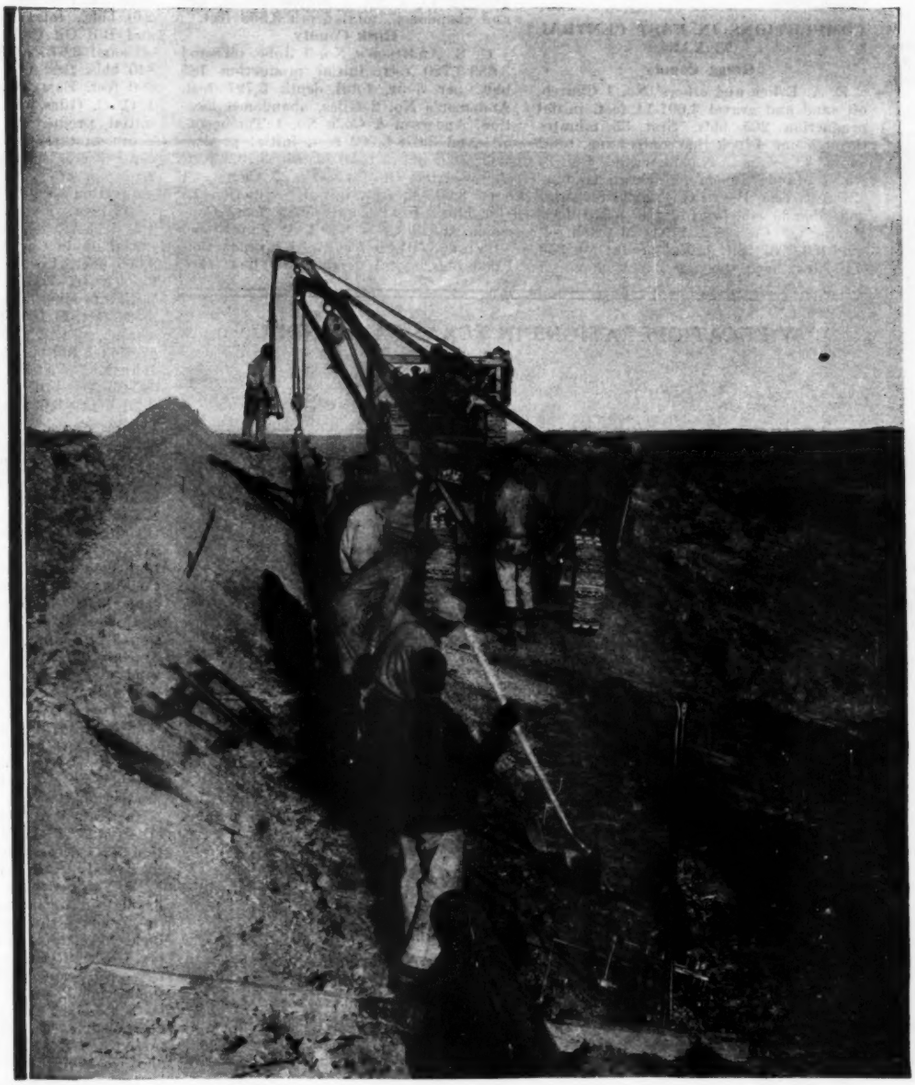
Beck's No. 1 Sullivan, 330 ft. N and E, W½ NW, Sec. 135, Blk. 3, I.&G.N. Sur. ..... Run 5-in. csg. 3,058 ft.

Boyles et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 25, H.&G.N. Sur. ..... Spudded and S.D.

Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur. ..... S.D. 740 ft.

Danciger O. & R. Co.'s No. 1-A Barrett, NW cor. S½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. ..... Drlg. 480 ft.

(Continued on Page 52)



MILES AHEAD

MILES ahead of schedule is a common fact where the pipe is being handled by Trackson Crawler Tractors and Resistcor Seminole Booms. They get things done in a hurry and take the whacks and bangs of tough service with a grin. One of the many exclusive features is *wide clearance* between the crawlers and motor. This permits easy adjustment or lubrication and secure attachment of the boom. Trackson-Resistcor is standard equipment with some of the largest pipe line operators in the country. Write for bulletin No. 265. TRACKSON COMPANY, 1321 So. First St., Milwaukee, Wis.

TRACKSON
McCORMICK-DEERING

EAST CENTRAL TEXAS

(Continued from Page 49)

son farm to the east of the Hamby test. This test topped the Georgetown at 3,668 feet and was abandoned at a total depth of 3,690 feet.

The W. G. Ray Drilling Co.'s test on the Smith farm in the Isaac Skillern Survey, 1 mile west of Willow Springs in Gregg County, topped the Georgetown at 3,545 feet this week and is marked off as a dry hole as are the two tests a short distance to the north, Hickman's No. 1 Castleberry (Smith) and Merren and others' No. 1 Smith in the Skillern Survey. A line drawn through these three tests past the eastern side of the Farrell-Lathrop Pool to the north, and also to the south through the Byrd and others' No. 1 Elder and the Richards test near Kilgore, is now considered as the line of demarcation between the producing territory on the west and the dry territory on the east. Many are of the belief that a fault will be proved along this line, and that all tests drilled on one side or the other will bear out this theory. This will be an interesting feature when other tests are made in Gregg County, especially along the trend between the Kilgore and Farrell-Lathrop Pools.

Farrell-Lathrop Extension

The Farrell-Lathrop Pool is also to be extended 1¾ miles to the northwest as the Sultan Oil Co. drilling on the Spangler (Thrasher) farm in the G. W. Hooper Survey, cored saturated sand from 3,532-40 feet and is now shut down with casing cemented. Elevation is 320 feet. This is enough sand to prove a producer in this area, and a consequent extension well.

De Armand and others' No. 1 Fluellan in the Marshall Mann Survey, across the Gregg County line in Upshur County, remains a mystery test with coring being carried on at night or unobserved by company scouts in day-time. It had saturated sand from 3,775-79 feet and casing was set at 3,774 feet, and coring was being done today, but no authentic reports can be obtained.

Simms Oil Co. and Stanolind Oil & Gas Co.'s No. 1 Tenery, east of the Farrell-Lathrop discovery well, Gregg County, blew in on the morning of March 29 estimated good for around 10,000 to 15,000 bbls. The well flowed wild for four hours, most of the oil going into the pit. Heavy gas pressure was the cause of the well blowing in and flowing wild, exceeding the expectations of the crew which had not prepared for such pressure.

Coring in North Kilgore

The Humble Oil & Refining Co. cored 66 feet of sand this week in its No. 2 Peterson in the northern part of the Kilgore Field, not drilling through the sand. It was completed for an initial production of 450 bbls. the first hour and 850 bbls. the second hour, making over 10,000 bbls. the first 13 hours through casing and various size chokes. It cored the first sand from 3,670-79 feet, had lime from 3,679-83 feet, another body of sand from 3,683-98 feet, then logged sand, sandy shale and lime to 3,740 feet. From 3,740-60 feet it had more sand, and from this depth to the total depth of 3,770 feet it logged shale. This well is producing from the largest body of sand yet found in the Kilgore, or any of the three pools, and proves the sand is not of a thin lens as formerly believed. It would also lead to the belief that many wells in the pools will produce a vast amount of oil before water encroaches, or the wells are pumped dry. It also helps establish the theory that the pay horizon found in Gregg and Rusk Counties is the Woodbine sand instead of the Tokio as some believe. Total depth of this test is 118 feet below that of the Bateman discovery well.

The I. & G. N. Railroad has been transporting over 100,000 bbls. per day out of the Kilgore and Joiner areas and men with the company stated it would continue to haul all the oil tendered it for shipment, and that facilities were being increased as to accommodate more crude oil shipments.

The Van Pool is now producing its new allowable of 40,000 bbls. by previously granted permission of the Railroad Commission.

COMPLETIONS IN EAST CENTRAL TEXAS

Gregg County

E. A. Eslick and others' No. 1 Church, oil sand and gravel 3,601-14 feet, initial production 205 bbls. first 35 minutes through one 4-inch line and casing, total depth 3,624 feet. Hickman and Baird's No. 1 Maude Smith, top Pecan Gap 2,327 feet, base Pecan Gap 2,925 feet, dry and abandoned, total depth 3,570 feet. Marine Oil Co.'s No. 1 Art Mitchell, oil sand 3,613-37 feet, initial production 350 bbls. first hour through 1-inch choke on tubing, total depth 3,637 feet. W. G. Ray Drilling Co.'s No. 1 Maude Smith, dry and abandoned, total depth 3,555 feet.

Rusk County

G. S. Anderson's No. 1 Jobe, oil sand 3,683-3,720 feet, initial production 185 bbls. per hour, total depth 3,727 feet. Anderson's No. 2 Giles, abandoned location. Anderson & Co.'s No. 1 Thompson, oil sand 3,678-3,702 feet, initial production 320 bbls., total depth 3,702 feet. Consolidated Oil Co.'s No. 2 Camp, oil sand 3,607-42 feet, initial production 1,100 bbls., total depth 3681 feet. Consolidated Oil Co.'s No. 1 William Jobe, oil sand 3,561-89 feet, initial production 1,000 bbls., total depth 3,605 feet. Roy I. Carter's No. 2 Mayfield-Alford, oil sand 3,611-26 feet, initial production 1,240 bbls., total depth 3,674 feet. Dave and Bill Oil Co.'s No. 1 Calvin Young, oil sand 3,675-90 feet, initial production 845 bbls. first 6½ hours, total depth 3,690 feet. East Texas Refining Co.'s No. 1 C. C. Giles, oil sand 3,678-3,715 feet, initial production 1,780 bbls. first 11 hours on three-quarters-inch choke, total depth 3,715 feet. Federated Oil Co.'s No. 2 Camp, oil sand 3,612 70 feet, initial production 158 bbls. per hour, total depth 3,665 feet. Federated Oil Co.'s No. 2 Mayfield-Alford, oil sand 3,581-87 feet, initial production 1,200 bbls., total depth 3,660 feet. Foster and Deep Rock Oil Co.'s No. 2 Ashby, oil sand 3,625-52 feet, initial production 645 bbls., total depth 3,664 feet. Hefflin-Fox and others' No. 1 Thrash, oil sand 3,675-82 feet, initial production 1,900 bbls., total depth 3,698 feet. John MaBee's No. 1 Thrash, oil sand 3,645-85 feet, initial production 2,250 bbls., total depth 3,698 feet.

John Mabee's No. 2 Thrash, oil sand 3,635-57 feet, initial production 110 bbls. per hour, total depth 3,696 feet. Petroleum Marketing Co.'s No. 1 Deason, oil sand 3,666-74 feet, initial production 2,877 bbls., total depth 3,690 feet. Shaw Oil Co.'s No. 1 Thrash, oil sand 3,670-91 feet, initial production 2,100 bbls., total depth 3,693 feet. Sinclair Oil & Gas Co.'s No. 4 Holland, oil sand and broken shale, 3,616-34 feet, oil sand and chalk and shale 3,634-95 feet, initial production 1,250 bbls., total depth 3,695 feet. Sinclair Oil & Gas Co.'s No. 6 Holland, sand and shale, 3,669-3,710 feet, initial production 888 bbls., total depth 3,710 feet. Turman Oil Co.'s No. 1 Deason, oil sand 3,686-96 feet, initial production 489 bbls. first five hours through tubing, total depth 3,696 feet. Turman Oil Co.'s No. 2 Beason, oil sand 3,675-3,700 feet, initial production 106 bbls. per hour, total depth 3,700 feet. Ward Oil Co.'s No. 1 Giles, oil sand 3,678-3,717 feet, initial production 934 bbls. in 10 hours through tubing, total depth 3,727 feet. Burton Oil Co.'s No. 1 George Thompson, top sand 3,650 feet, initial production 2,603 bbls. in 17 hours through two three-quarters-inch choke, total depth 3,705 feet. Humble Oil & Refining Co.'s No. 9 L. D. Crim, oil sand 3,685-3,725 feet, initial production 125 bbls. first hour on eleven-sixteenths-inch choke on tubing, total depth 3,725 feet. Humble Oil & Refining Co.'s No. 1-B J. M. Crim, oil sand 3,666-83½ feet, initial production 4,955 bbls. in 18 hours, total depth 3,684 feet.

Van Zandt County

Pure Oil Co.'s No. 7 W. T. Jarman, initial production 74 bbls., total depth 2,950 feet. Pure Oil Co.'s No. 3 R. E. Cade, initial production 84 bbls., total depth 2,958 feet.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 50)

Danciger O. & R. Co.'s No. 1-B Barrett, SW cor. N½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. — Rig up (rotary).
Danciger O. & R. Co.'s No. 1 Sullivan, 231 ft. N, 224 ft. W. of E 160 ac. of S 264 ac., N½, Sec. 136, Blk. 3, H.&G.N. Sur. — S.O. 3,055 ft.
Danciger O. & R. Co.'s No. 1 Barnett, 231 ft. S, 330 ft. W, E½ of N 56 ac., Sec. 136, Blk. 3, I.&G.N. Sur. — S.D. 3,097 ft; 5,000,000 ft. gas 3,097 ft.
Danciger O. & R. Co.'s No. 2 Sullivan, 231 ft. N, 884 ft. W of E 160 ac. of S 264 ac., N½, Sec. 136, Blk. 3, H.&G.N. Sur. — S.D. 3,351 ft.
Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur. — S.D. 2,770 ft.
Magnolia Pet. Co.'s No. 1 Barrett, 330 ft. S and E. NE. Sec. 112, Blk. 3, I.&G.N. Sur. — Cmtd. 8-in. 2,508 ft.
Magnolia Pet. Co.'s No. 4 Latham, 300 ft. N, 820 ft. E. Sec. 153, Blk. 3, I.&G.N. Sur. — Top pay 2,922 ft; flowing 5,000 bbls. oil and 28,000,000 ft. gas; T.D. 2,922 ft.
Magnolia Pet. Co.'s No. 1 Eddington, 330 ft. N, 370 ft. E. NE. Sec. 34, Blk. B-2, H.&G.N. Sur. — Drlg. 2,445 ft.
Nelson et al's No. 1 Crews, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur. — Fishing for bit; T.D. 2,620 ft.
Operators Royalty & Prod. Co.'s No. 2 Vanniman, 330 ft. S and W, E½ NE, Sec. 175, Blk. 3, I.&G.N. Sur. — Drlg. 2,835 ft.
Sanders et al's No. 1 Wright, 330 ft. S, 114 ft. E, Sec. 12, Blk. 3, I.&G.N. Sur. — Drlg. 2,406 ft.
Skelly O. & G. Co.'s No. 1 Henston, 330 ft. N, 330 ft. E, Sec. 164, Blk. 3, I.&G.N. Sur. — Drlg. 890 ft.
Stanolind O. & G. Co.'s No. 2 Cobb, 330 ft. S and E, Sec. 165, Blk. 3, I.&G.N. Sur. — Reaming 8-in. csg. 2,373 ft.
Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. — S.D. 2,686 ft.
The Texas Co.'s No. 1 Webb, 330 ft. S and E, Sec. 12, Blk. 26, H.&G.N. Sur. — Drlg. 2,400 ft.
Warner Oil Co.'s No. 1 Morse, 330 ft. S and W, N½ NW, Sec. 68, Blk. 25, H.&G.N. Sur. — Cellar.

HUTCHINSON COUNTY

Canadian River Gas Co.'s No. 1 Dunnaway, 330 ft. N, 1,320 ft. E. NE NE, Sec. 5, Blk. Y-2, T.T. Sur. — S.D. 2,725 ft.
Continental Oil Co.'s No. 1 Moore, 990 ft. S, 2,276 ft. W, S½ SW, Sec. 21, Blk. M-21, T.C. Sur. — Drlg. 2,929 ft.
Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 81, Blk. 46, H.&T.C. Sur. — S.D. 450 ft. (SLM).
Dixon Creek Oil Co.'s No. 1-F Johnson Bros., 330 ft. N and E of W 67 ac., SW, Sec. 15, Blk. XO3, H.&O.B. Sur. — S.D. 3,122 ft; 4,000,000 ft. gas and oil show 3,070 ft.
Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E of W 60 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. — Drlg. 1,945 ft.
Huber Pet. Co.'s No. 1 McIlroy, 330 ft. S, 330 ft. W, Sec. 28, Blk. Y, A.F.B. Sur. — Drlg. 3,030 ft.
Liner Drlg. Co.'s No. 1-D Johnson Bros., 330 ft. N and E, W½ SW, Sec. 6, Blk. 1, B.&B. Sur. — Run 6-in. csg.
Liner et al's No. 1 Johnson Bros., 990 ft. S, 330 ft. E, W½ SE, Sec. 29, Blk. Y, A.&B. Sur. — Spudded and S.D.
Stanolind O. & G. Co.'s No. 1 Barnhill, common cor. of Tracts 28, 29, 30 and 31, G. Martinez Sur., Blk. 2 — Drlg. 3,415 ft.
Stanolind O. & G. Co.'s No. 2-A Pitcher, 990 ft. S, 330 ft. W, SE, Sec. 19, Blk. M-21, T.C.R.R. Sur. — Cmtd. 8-in. csg. 2,998 ft.
Skelly Oil Co.'s No. 1 Johnson Bros., 660 ft. S and W, SE. Sec. 30, Blk. Y, A.&B. Sur. — S.D. 3,115 ft.
The Texas Co.'s No. 1 Moore, 990 ft. N, 330 ft. W, SE, Sec. 21, Blk. M-21, T.-C. Ry. Sur. — Cmtd. 10-in. csg. 1,150 ft.
Texilvania Oil Co.'s No. 1 Harvey, 330 ft. N and W, SW NW, Sec. 14, Blk. M-21 — S.D. 3,092 ft; estimated 5-bbl. well.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. — T.D. 5,003 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch — Small S.O. 1,133-40 ft; S.D. 4,167 ft.

MOORE COUNTY

Cloud & Dana's No. 1 Jones, 330 ft. N and E, SW, Sec. 169, Blk. 3-T, T.&N.O. Sur. — Run 6-in. 3,195 ft.
Continental Oil Co.'s No. 1 Brown, 990 ft. N and W, SE, Sec. 172, Blk. 3-T, T.&N.O. Sur. — Drlg. 3,320 ft.
Dana O. & G. Co.'s No. 1 R. Utey, 330 ft. S and W, NE, Sec. 135, Blk. 3, T.&N.O. Sur. — Drlg. 3,465 ft.
Gulf Prod. Co.'s No. 2 Kilgore, C SE, Sec. 29, Blk. P.Mc., E.L.R.R. Sur. — Run 8-in. csg. 2,844 ft.
Sunray Oil Co.'s No. 1 Rupert, 660 ft. N, 330 ft. E, NW, Sec. 191, Blk. 3-T, T.&N.O. Sur. — Cellar.
Plains Holding Co.'s No. 1 Bridges, 1,690 ft. S and E, NW, Sec. 252, Blk. 3-T, T.&N.O. Sur. — Drlg. 3,370 ft.
Sunray Oil Co.'s No. 2 Jones, 330 ft. S, 990 ft. E, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. — Rig on ground.
The Texas Co.'s No. 1 Jester, C SW, Sec. 14, Blk. 6-T, T.&N.O. Sur. — Rig up.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G. B.&B. Sur. — S.D. 580 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. — Spudded and S.D.
Chambers et al's No. 1 Herring, CNL, Sec. 20, Blk. 8, G.C.&S.F. Sur. — Drlg. 900 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1-B Crawford — Rig up.

WHEELER COUNTY

Devore & Robinson's No. 1 Sitter, 2,310 ft. S and E, Sec. 33, Blk. 24, H.&G.N. Sur. — S.D. 2,193 ft; estimated 63,000,000 ft. gas.
Fain & McGahay's No. 1 Oscar Close, C NW, Sec. 78, Blk. 23, H.&G.N. Sur. — Rig.
Vollmert's No. 1 Porter, 330 ft. S and E, NE, Sec. 15, Blk. 27, H.&G.N. Sur. — Rigged up and S.D.

EAST CENTRAL TEXAS

Boggy Creek	2,620
Cedar Creek	20
Currie	245
Hill County	30
Mexia	3,531
Nigger Creek	135
Powell	4,587
Richland	70
Rusk and Gregg Counties	119,000
Van	35,031
Wortham	480
Total East Central Texas	165,749
Week ended March 21	139,296
Increase	26,453

B. F. SMITH DEAD

Benjamin Franklin Smith, veteran oil operator, died in St. Petersburg, Fla., on March 22. The funeral and burial were conducted in Corry, Pa. Mr. Smith was a pioneer oil operator in the Bradford Field in Pennsylvania and for years was a prominent member and active trader in the Bradford Oil Exchange. He is survived by three sons, Dr. Stanley Smith, of Pittsburgh, Arch L. Smith and R. G. (Ted) Smith of Tulsa.

L. N. NICKEY DIES

L. N. Nickey, 42, secretary and assistant treasurer of the Texon Oil & Land Co., Fort Worth, Tex., died from injuries received in an elevator accident.

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NEW AND IMPROVED IMPERIAL SUCKER ROD ELEVATOR

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Pipe Line Construction News

MISSISSIPPI LINES VALUED AT $50,000,000

JACKSON, Miss., Mar. 28.—With approximately $50,000,000 worth of pipe line properties in the State, including those built and in process of construction, only a small part is subject to taxation at this time, according to the secretary of the State Tax Commission, A. S. Coody.

This situation, Mr. Coody explained, is due to the fact that all of the companies having major projects in the State were organized prior to last November and therefore are free from taxation under the five-year exemption law which was repealed by the legislature last year, effective November 1, 1930.

The Interstate Gas Co., with pipe line properties worth $2,500,000, will go on the tax rolls in 1932, Mr. Coody said, and others will be assessed in 1933 and 1934. As a result of the repeal of the exemption law, he added, all such companies will necessarily be taxed in 1935.

Mr. Coody's statement was made in connection with the receipt of an opinion from the attorney general, George T. Mitchell, holding that the State Tax Commission, under the code of 1930, must assess pipe line companies which operate in more than one county. Heretofore, he explained, the State has not assessed such companies.

Mr. Coody's estimate of the present value of pipe lines in Mississippi, he said, was based upon a total of $37,500,000 shown by the companies in their 1930 reports to the commission.

The companies and the value of their respective properties in the State, as shown by their reports, are as follows:

Interstate Gas Co., $2,500,000; Gulf Cities Gas Co., $4,700,000; Mississippi Gas & Electric Co., $1,374,000; Memphis Natural Gas Co., $1,850,000; Mississippi Natural Gas Corp., $1,550,000; Mississippi Industrial Gas Co., $8,930,000; Southern Natural Gas Co., $10,500,000; Mississippi Transmission Corp., $5,350,000; and Amory Natural Gas Co., $1,360,000.

SOUTHERN FUEL AWARDS PIPE LINE CONTRACT

The remaining 131 miles of 26-inch gas line pipe for the Southern Fuel Co.'s line from Kettleman Hills to Los Angeles has been awarded to the A. O. Smith Corp. This is all of the main line with the exception of a part reserved for a local California manufacturer. The order involves approximately 25,000 tons of steel.

The A. O. Smith Corp. has also been awarded an additional order of 50 miles of 12-inch oil line pipe for The Texas Company's lines from East Texas to the Gulf.

SHREVEPORT LINE READY IN MAY

Ford, Bacon and Davis, of New York, has opened district offices at Dallas, Tex., with William von Puhl, Jr., as resident engineer and A. W. Cherry as general superintendent. This company will lay an 8-inch welded line for the Arkansas Pipe Line Co. from the Farrell-Lathrop Pool in Gregg County to Shreveport, La. Construction of the line has already been started, and the line will be completed about the middle of May.

AWARD CONTINENTAL CONTRACT

Ford, Bacon and Davis were awarded the contract by the Continental Construction Co. for 158 miles of line from Moline, Ill., to Joliet, Ill., which stretch will complete the large gas line constructed by this company.

EAST TEXAS PIPE LINES PLANNED, UNDER CONSTRUCTION, COMPLETED

FORT WORTH, Tex., Mar. 30.—The Independent Pipe Line Co., organized by Cranfill and Germany of Dallas, has completed approximately 3½ miles of 6-inch line from the Pine Tree Pool in Gregg County to a 40-car loading rack on the Texas & Pacific Railroad. Eslick, Brown and Little, who last week completed No. 1 Church Lot well in the Dolores Sanches Survey, 1½ miles northeast of production in the pool, are building 6,000 feet of 4-inch line to conect with the Independent Pipe Line Co.'s carrier.

The Shell Pipe Line Co. has completed a 6-inch line from one of its leases in the Farrell-Lathrop or Pine Tree Pool, Gregg County, to a 40-car loading rack on the Texas & Pacific Railroad near Willow Springs and will ship oil via tank car to its Houston refinery. Other leases of the company which prove productive will be tied into by gathering lines as producing wells are completed.

The Simms Oil Co. which has one producer in the Farrell-Lathrop Pool, Gregg County, and holds a half interest with the Stanolind Oil & Gas Co. in several other leases in the area, is laying a 4-inch line from its producing lease east of the discovery well, to a loading rack west of the Arkansas Fuel Oil Co.'s rack at Willow Springs, and will ship crude to the company's refinery at Dallas, Tex.

J. W. Olvey has completed his 6-inch line from his Crim lease in the Bateman or Kilgore Field, northern Rusk County, to a 48-car loading rack 3 miles south of Longview in the S. P. Ford Survey, and has been loading oil over the I.&G.N. Railroad to various points. One 5,000-bbl. and one 10,000-bbl. tank has been erected near the loading racks. The Atlas Pipe Line Co. of Shreveport will erect two 80,000-bbl. tanks near this rack and will connect its 8-inch with the Olvey 6-inch from the Kilgore Field. The 8-inch line will be laid to Shreveport and serve the Spartan Oil & Refining Co.'s refinery which was formerly owned by the Shreveport-El Dorado Pipe Line Co. The survey has been made for this line, the right of way is being purchased and pipe in transit for it. The line will be approximately 70 miles long. Another lateral will be laid from the west end of this line into the Farrell-Lathrop Pool in Gregg County.

The Burton Drilling Co., which has one producing well on its E. B. S. Florey lease in the Peter Holmes Survey, Bateman Pool, northern Rusk County, has laid 3 miles of 4-inch line to a loading rack on the I.&G.N. Railroad west of Kilgore and will ship its own crude from this rack.

The McMillan Oil Corp of El Dorado, Ark., which completed a 1½-mile northwestern extension well in the Joiner Field, Rusk County, last week, will lay 4 miles of 4-inch line to a loading rack to be built on the I.&G.N. railroad north of the field, and will ship crude from its lease from this loading rack.

The Crown Central Pipe Line Co., which has a 6-inch line laid from the Joiner Pool to Friars Switch on the I.&G.N. railroad, is laying 2 miles of 4-inch line to connect with Demonstrend and others' No. 1 Bridwell producer, which came in last week extending production in this field 2 miles.

The Gulf Pipe Line Co., which holds several leases with the Humble Oil & Refining Co. in the northern part of the Joiner Field, but not yet producing, is preparing to run a lateral line into the field from its Oklahoma-Gulf Coast trunk line which runs within 3 miles of the field. The main line will carry Joiner crude to its refinery and docks at Port Neches. Survey for the lateral was made some time ago, and actual construction of the line will be commenced immediately.

The Southern Oil & Refining Co. has completed a 4-inch line to Friar Switch on the I.&G.N. railroad, north of the Joiner Field, and will help swell the total of the tank car shipments from this area. The I.&G.N. is now carrying over 100,000 bbls. per day out of the Joiner and Kilgore areas and states it will continue to carry as much as the companies tender for shipment. This railroad was the first to carry oil from the Joiner and Kilgore Field and is the only outlet for crude from these fields as no trunk line has been completed to distant points.

The Sabine Oil & Refining Co. will construct a loading rack and gathering lines in the Kilgore Pool, northern Rusk County, and will purchase oil for shipment. The company is also building a 4-inch line into the Joiner Pool from Friars Switch on the I.&G.N. railroad and is constructing several gathering lines in that field with the intentions of purchasing oil from various producers.

The Magnolia Pipe Line Co., which has constructed a 10-inch line from Center Station in Shelby County to a main pumping station in the John Groce Survey, Gregg County, with laterals running to this station from the Farrell-Lathrop and Kilgore Pools, has completed this line and tested it. As soon as the main pump station is completed the line will be put into use, but this will take about another two weeks. The line will have a capacity of around 38,000 bbls. per day with the present proposed stations.

RUSSIANS TO LAY LINE FROM FIELD TO MOSCOW

The detailed survey has now been completed of the various alternative routes for the proposed oil pipe line between Makhatch Kala, on the Caspian Sea, and Moscow, a distance of about 1,000 miles, says the Petroleum Times of London. The capacity at first will be 11,500,000 bbls. per annum, but provision will be made for enlargement to 17,500,000 bbls., and the plans allow for the transport of crude mixtures of either .879 or .915 gravities. The first-mentioned capacity will necessitate 15 to 18 pumping stations, according to the gravity of the oil, and at its enlarged capacity, 30 to 37 stations will have to be provided. At first laid down, each station will have two compressorless Diesel engines, of 333 horsepower at 160 r.p.m., for operation and one in reserve, whilst when the line is enlarged a further similar engine will be installed. Plunger pumps will be employed owing to the lack of electrical power, and centrifugal pumps are not deemed suitable owing to the great viscosity changes in the oil. The pumps will work under pressures of 48 to 50 atmospheres, 720 to 750 pounds, and therefore the 12-inch pipe will have 10, 9 and 8 mm. gauge, tested to 90, 75 and 55 atmospheres, 1,350, 1,125 and 825 pounds respectively.

GUTHRIE-OKLAHOMA CITY LINE

Western Service Corp. has announced it will start construction of an 8-inch gas pipe line from the Oklahoma City Field to the city of Guthrie, Okla. Work is to start as soon as the pipe is delivered and is expected to be completed by November, 1931. The company was granted a 25-year domestic and industrial franchise at Guthrie. One compressor station will be constructed, and about $750,000 will be invested in the project.

NORTH CENTRAL GAS CO. LINE MAY BE DELAYED

DENVER, Colo., Mar. 31.—The construction of the North Central Gas Co.'s proposed 378-mile natural gas pipe line from the Fremont County gas fields in Wyoming, through Casper, Glenrock and Douglas to Bridgeport, Neb., may be delayed according to reports in Denver. Bids for the project were opened in Casper on February 15, but no contract was awarded. It was understood that the signing of the contract was delayed pending the completion of negotiations for the supplying of some industrial plants in the area to be served. Since then it has been reported that the Colorado coal operators who have been supplying fuel to the Great Western Sugar Co.'s factories in the Scottsbluff district agreed to furnish coal at a very considerable reduction over former prices and that as a result these interests have decided not to contract for natural gas. The sugar factories were depended upon to take large quantities of gas in the late summer at the end of the harvesting season so as to equalize the load throughout the year. Most all the details of construction had been worked out and the construction contracts called for the completion of the line by September 1, 1931, but the delays in working out the marketing plans are said to have made the postponement of work advisable.

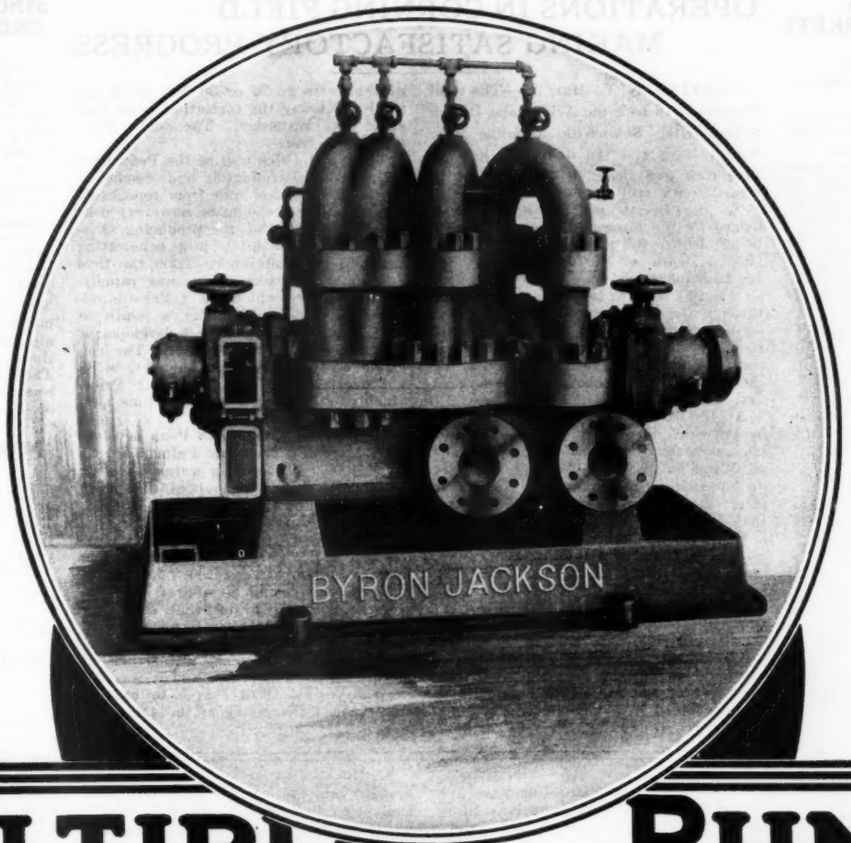
FRANCHISES IN IDAHO SUBJECTS OF HEARINGS

BOISE, Idaho, Mar. 28.—The Idaho Supreme Court has before it at its present sitting in Pocatello the hearing of the appeal from the decision of the Idaho Public Utilities Commission, whereby was granted a certificate of necessity and convenience to John McFadyen and others (Ohio Oil Co.), over the protest of the Public Utilities Consolidated Corp. of Pocatello which manufactures and distributes gas in that city. The applicants for permission to construct and maintain a natural gas transmission and distribution system will hook up with the system now supplying a large part of Utah, through the Western Public Service Corp., and its subsidiaries from the Baxter Basin and Hiawatha Fields in Wyoming and Colorado.

The Idaho Public Utilities Commission has been conducting at Wallace, Idaho, a hearing on the application of Jerome L. Drumheller, of Spokane, Wash., for a certificate of necessity and convenience to construct a natural gas pipe line across northern Idaho. The Drumheller interests propose piping Montana gas to Spokane via northern Idaho, and serving en route smelters near Wallace and Kellogg. Protest was entered by a group drilling for oil and gas near Ramsey, north of Coeur d'Alene.

PANHANDLE EASTERN BRANCH

The Panhandle Eastern Pipe Line Co. will begin laying pipe from the lines northwest of Mildred and Kincaid this week, according to J. J. Griffin, who has secured gas franchises for both Mildred and Kincaid and has arranged for a supply to be delivered through the Panhandle's lines. He says a new gas company, which will distribute gas in that territory, will be named the Kansas Gas & Fuel Co., of which he will be superintendent. M. J. Sullivan and T. C. Melrose, both of Kansas City, are to be president and vice president and general manager.



MULTIPLEX PUMPS
for SUSQUEHANNA GASOLINE LINE

Ten 4 in. 6-stage Byron Jackson Oil Line Multiplex Pumps have been selected for service on the Sun Oil Company's Susquehanna Pipe Line. Two of these pumps will each deliver 20,000 bbls. per day against a total pressure of 600 pounds per sq. in. In shop tests these two pumps showed an efficiency of 78½ percent.

Eight pumps will each have a capacity of 12,000 bbls. per day against a total pressure of 800 pounds per sq. in. These pumps in shop tests showed an efficiency of 75 percent.

Byron Jackson Oil Line Multiplex Pumps are designed to produce full pipe line pressure in a single case. They have found a wide acceptance in the industry for line service. Low first cost, small floor space and housing requirements are features of these pumps. The maximum delivery of oil through the line is assured by the steady pressure developed. Built standard for capacities ranging from 10,000 to 45,000 bbls. per day.

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CENTRIFUGAL PUMPS FOR EVERY SERVICE

PIPE LINES WILL NOT DISTURB THE MARKETS

(Continued from Page 23)

the 4-inch line from Chicago to Milwaukee, have been announced.

Under this schedule, the Great Lakes company will be making regular shipments from six refineries to Chicago, Des Moines, Twin Cities and Omaha by midsummer. An agreement has been entered into with the Phillips Pipe Line Co. by which it will be possible to tender shipments at Kansas City for delivery at St. Louis, the eastern terminal of the Phillips line. This line is scheduled for completion within a few weeks.

Gathering System

The six refineries to which the gathering system will be connected will have a crude oil capacity of 120,000 bbls. daily. According to The Oil and Gas Journal's 1931 Annual Survey of Petroleum Refineries in the United States (March 5, 1931, issue) the refineries have the following capacities:

	Bbls. Dly.
Barnsdall Refineries, Inc. Barnsdall..	5,000
Barnsdall Refineries, Inc., Okmulgee.	11,000
Continental Oil Co., Ponca City	30,000
Mid-Continent Pet. Corp., Tulsa.....	40,000
Phillips Pet. Co., Okmulgee	6,000
Pure Oil Co., Muskogee	13,000
Skelly Oil Co., Eldorado, Kans.	23,000
Total	128,000

Note—All plants are located in Oklahoma with exception of Kansas plant of Skelly company.

Although these plants at present are running less than 50 per cent capacity, it is certain that this will be increased to around 80 per cent with the return to normal operations. All the plants have modern skimming and cracking equipment and will show an average yield of at least 60 per cent gasoline. This will mean a gasoline output of 65,000 bbls. daily or more than double the line capacity. The Barnsdall Refineries, Inc., has a refinery at Wichita, Kans., which is not connected to the line. The Continental company has a second Oklahoma refinery at Sapulpa and the Pure company a second plant at Ardmore, Okla. The Sapulpa plant is within a few miles of the gathering line between Tulsa and Okmulgee and could easily be connected to the line if deemed advisable later.

Consumption Outlets

A study of the gasoline demand in the territory to be served by the Great Lakes distributing system supports the statement that the line is relatively a small factor in the total gasoline consumption of the area served. The line will pass through the states of Wisconsin, Kansas, Missouri, Iowa, Nebraska, Minnesota and Illinois. The Chicago terminal is only a few miles from Michigan and Indiana. These nine states have a population of 30,000,000 people and consume approximately 25 per cent of the total consumption in the United States. Oklahoma is not included in the list of states because it is improbable that pipe line gasoline will be distributed in the State due to the fact that five of the six refineries are located in that area.

It is estimated that the domestic gasoline in the United States will average at least 1,100,000 bbls. daily in 1931 which will mean that the nine states will consume 275,000 bbls. daily or nearly 10 times the capacity of the Great Lakes line. Not all points in the nine states can be served economically from the Great Lakes system but it will touch all the main consuming points with relatively short hauls to many other large distributing centers.

The cities of Chicago, Des Moines, Omaha, Milwaukee, Minneapolis, St. Paul, Kansas City, Mo., and Kansas City, Kans., where terminal facilities will be available have an average minimum gasoline consumption of 55,000 bbls. daily. The metropolitan areas surrounding these cities add at least 50 per cent to this figure.

No other terminal facilities have been announced although it is apparent from a study of a map that pipe line connections could be made to other cities near the line if a sufficient volume of business is obtainable. Most of the pump stations which are located at 50-mile intervals along the main and connecting lines are potential terminals or bulk stations. Storage facilities are available at these points and deliveries of gasoline could be made either to trucks or tank cars if rail connections were built. However, the company has no immediate plans for making bulk station facilities available at these points.

Truck Hauls

If possible, according to Harry Moreland, vice president and general manager, the Great Lakes company expects to make all deliveries of gasoline by pipe line and rail. At the Kansas City terminal the gasoline is being loaded in tank cars for delivery to the bulk stations of the companies using the line. A switching cost is charged for delivery from the terminal to the bulk stations.

A survey has been made as to the cost of operating a fleet of tank wagon trucks at the terminals but if satisfactory arrangements can be made as to rail rates for short hauls the truck service will not be used.

OPERATIONS IN CORNING FIELD MAKING SATISFACTORY PROGRESS

CORNING, N. Y., Mar. 28.—The sand formations in both the Ackley and Bertch wells in the Sabinsville anticline have been passed, and the drills are now in lime rock and shale, drilling being continued, with still no evidence of gas.

At the Bertch well near Westfield, owned by the Segar Oil & Gas Co., and being drilled by the Hope Engineering Co., a depth of 4,916 feet had been reached today. A week ago the drill struck the sand at 4,864 feet and went through the sand at 4,887 feet. It was stated that a formation of white lime rock has been struck and drilling will continue until either gas is struck, or the decision is reached that the hole is dry.

At the Ackley well, the flue on the boiler which blew out was repaired and operations were resumed. At this well, sand was struck at 5,020 feet, and the drill passed through that strata at 5,055 feet, running into dark lime rock and shale at 5,058 feet. The Lycoming Oil & Gas Co. owns this well which is being drilled by the Acme Drilling Co. It is possible on this project, that a decision will be reached to discontinue operations, but no such decision has been made yet, and officials decided to drill further in hope of a strike.

At the Harrison well, south of Lawrenceville, casing had been run to within 18½ feet of the full depth and drilling was continued in a combination of lime and sand. It was stated that drillers may have to go 20 or 30 feet to hit the sand and today the formation is as hard as it was yesterday. The depth today was 3,496 feet.

The No. 1 Price well of the Penn Ohio Gas Co. at Farmington had reached a depth of 3,890 feet and from topographical calculations should be now very near the lime horizon of the producing Oriskany sand. The bit is now penetrating a light shale and reports from the field said that work was progressing rapidly. No. 1 Close, to which No. 1 Price is adjacent, was brought in at a depth of 4,017 feet. Drillers on that development struck the lime at 3,993 feet. The elevation of the Close well, however, is 80 feet greater than that of No. 1 Price, which should indicate that the lime may be expected at any time.

The No. 1 Kemp, North Penn development 1,000 feet from the Palmer discovery well, which has been watched closely by gas men and pronounced dry more times than any other well in the field, may yet be a producer.

The Allegany Gas Co., subsidiary of the North Penn Gas Co. put what was thought to be a successful shot in the No. 1 Kemp well, using 80 quarts of nitroglycerin with the result that some gas was discovered. Several methods to loosen the casing so it could be pulled up to the sand where gas was struck on the discovery well, failed, and it was decided to use a third charge to blow a hole through the casing at the 4,065-foot mark.

CALIFORNIANS EXPORT ASSOCIATION PERFECTED

(Continued from Page 22)

Cleveland, C. Homer Spotts, J. S. Mellon and W. F. Huff.

It was emphasized by several of the members that no affiliation with any other present organization in any way produces the results desired. The exporting of oil equipment is a specific undertaking and requires definite and continuous action. In order to achieve results that would be satisfactory it must therefore specialize on its objective. Mr. Spotts stated that the idea was big enough and strong enough to be carried on and that the problems must be met with the thorough knowledge that the members of the association possessed. Several remarked on their present connections with other associations and said they had received no help whatsoever from them. Mr. Cleveland spoke of his association as one which must function on its own and not be governed by any other larger organizations. He brought out that each one would get out of it only what he had put into it and urged that everyone enter into the work of the association to the greatest extent possible.

John Grant of the Grant Oil Tool Co. brought up the consideration of problems other than export. He feels that it would pay every member to pull together rather than at cross purposes. Other members considered the treatment of other problems but it was the consensus of opinion that the export situation required the entire attention of the association at the present time. The patent situation and the political aspects were spoken of by J. A. Dillmann of the Specialty Oil Tools Co. who felt that the association could render valuable assistance in these matters. Mr. Martin felt that the influence of the organization would be desirable for obtaining better recognition of patents.

The question of dues was brought up and Mr. Martin suggested that $50 per year from each member would probably handle and take care of the present expenses of the association. This tentative sum was suggested to the committee and definite action with recommendations will be handled by it. E. G. Lenzner pointed out that the export association will soon acquire a recognized standing and that in this way membership in it will be found of great value. Following a discussion on the consideration of matters other than export, he felt that the local problems were being well handled but that the industry knows less about the foreign problems which are urgent at the present time.

Mr. Martin said that he believed foreign business could be developed for the smaller manufacturer and that the export association would be of considerable value to him. Mr. Decker pointed out that this is a national association and that it will have local chapters and that each local chapter can handle its own problems as it desires.

SERVICES FOR A. F. ANDERTON

Funeral services for Aloysius F. Anderton, veteran refiner of Oil City, Pa., were conducted last week from St. Joseph's Church of that city. He was a member of several religious societies and fraternal ogranizations.

Mr. Anderton was the son of Thomas Anderton, founder of Continental Refining Co., and began his career in the petroleum industry in 1910 and rose from the position of stock manager to the office of president.

SINCLAIR COMPANY ASKS ORDER OF FEDERAL COURT

Alleging that the Oklahoma Corporation Commission's suspension of its order of March 4 was "arbitrary, capricious and without due process of law," Sinclair Oil & Gas Co. has applied to the United States district court for the western district of Oklahoma for an injunction restraining the corporation commission and its agents from enforcing orders of the commission relative to production in the Oklahoma City Field.

No attack is made upon the constitutionality of the Conservation Law of 1915, or the power of the commission. The action is rather to compel the commission to exercise its powers to fix the allowable production in accordance with the market demand, as required by law. The implication of the bill is that the commission has failed to do this because of outside influence exerted upon it.

NORTH AND WEST TEXAS

(Continued from Page 50)

production 6 bbls., total depth 1,246 feet. J. H. Turner and others' No. 1 W. R. Davis, dry and abandoned, total depth 1,801 feet.

Wise County

Rosenfield and others' No. 1 Texas Land & Mortgage Co., dry and abandoned, total depth 2,501 feet.

COMPLETIONS IN PANHANDLE DISTRICT

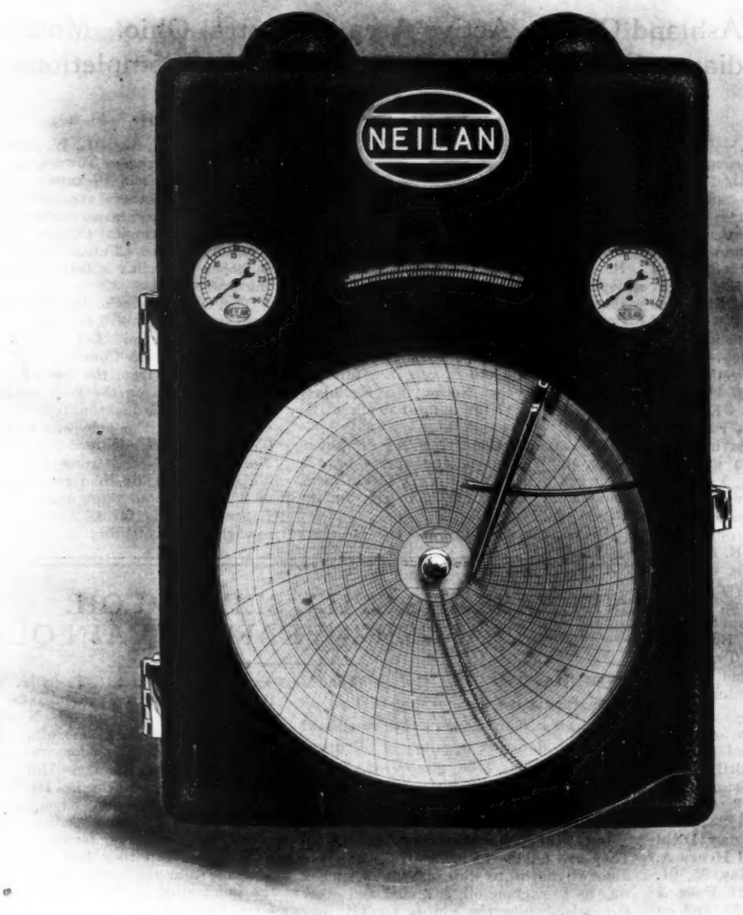
Gray County

Empire as & Fuel Co.'s No. 3 well, gas sand 2,452-2,600 feet, initial production 42,000,000 feet of gas, total depth 2,616 feet. Kewanee Oil & Gas Co.'s No. 1-D Morse, total depth 2,528 feet, plugged back to 2,498 feet, top pay 2,392-2,460-2,475-97 feet, shot 330 quarts 2,324-2,498 feet, initial production 150 bbls. Kewanee Oil & Gas Co.'s No. 1-E Morse, top pay 2,395-98-40-2,490-95 feet, initial production 325 bbls., total depth 2,505 feet. Kewanee Oil & Gas Co.'s No. 3 Smith, top pay 3,185-3,235 feet, shot 140 quarts 3,180-3,274 feet, initial production 420 bbls., total depth 3,282 feet. McIlroy's No. 1 Baer, top pay 3,225-49 feet, initial production 107 bbls., total depth 3,249 feet. W. A. Scott's No. 1 Cobb, total depth 3,425 feet, plugged back to 3,270 feet, top pay 2,335-2,360 feet, initial production 20,000,000 feet of gas. Sun Oil Co.'s No. 2 Combs, top pay 2,925-35 feet, initial production 429 bbls., total depth 2,935 feet. Wilcox's No. 20 Combs and Worley, top pay 2,870-2,918-2,920-50 feet, initial production 75 bbls. oil, 5 per cent water with 8,000,000 feet of gas, total depth 2,995 feet.

NORTH TEXAS PRODUCTION

Week ending March 28

Panhandle District—	Bbls.
Carson County	3,860
Hutchinson County	9,200
Gray County	42,220
Moore County	301
Potter County	....
Wheeler County	355
Total production this week	55,936
Total production last week	54,149
Increase	1,787
Wichita Falls District—	
Archer County	11,572
Bayior County	639
Clay County	645
Cooke County	1,921
Foard County	44
Jack County	921
Haskell County	23
Montague County	3,555
Throckmorton County	322
Wilbarger County	9,680
Wichita County	19,029
Young County	12,065
Total production this week	60,416
Total production last week	60,844
Decrease	428
Ranger District—	
Brown County	2,624
Callahan County	1,454
Coleman County	1,501
Comanche County	674
Palo Pinto County	329
Eastland County	3,459
Shackelford County	3,780
Stephens County	4,660
Total production this week	18,481
Total production last week	19,780
Decrease	1,299



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Small Gas Producers in the Lima Field

Ashland County Active Area in Central Ohio. Monroe County, Indiana, Has Fair Gas Producer. Eight Completions in Kentucky

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Mar. 30. — The old Lima division reports six completions since the last review and all are small gas producers. In Seneca County, Liberty Township, the Sandusky Gas Co. has a light gas well in No. 3 H. Wright farm, Section 24. Same company has a well of the same kind in No. 4 on the Schlachter-Fleck farm, same section, and a still lighter gas well in No. 1 on the Wilson Betts estate, Section 34, where No. 2 is drilling. These wells run from 5,000 to 20,000 feet but are giving good service. Same company has a gas well good for 10,000 feet in No. 1 George Doran farm, Section 3, Hopewell Township, and is drilling No. 2 same farm. In Pleasants Township, same county, the Ohio Oil Co.'s No. 3 Charles B. and Ida L. Miller farm, Section 31, is reported good for 9,000 feet. Arthur Geyer is drilling No. 3 F. E. Baldwin farm, Section 30, Clinton Township, same county.

Jones and Coyle's No. 1 Byron E. Powell farm, Section 8, Tymochtee County, is reported with around 200,000 feet of gas. It is close to McCutchenville.

Wells Abandoned

Wells after being producers for many years are being pulled out and the material utilized for late wells drilling. In Freedom Township, Wood County, the Ohio Oil Co. abandoned Nos. 3, 4 and 7 H. Westerhouse farm, Section 22; Nos. 2, 3, 4, 5, 15, 17 and 24 Henry Diehl farm, Section 28; Nos. 3 and 4 Henry A. Moorman farm, Section 33; Nos. 35, 61, 62, 63, 64, 75, 76, 82 and 121 Fuhr & Villwock No. 7 farm, Section 33, and on the Fuhr & Villwock farm No. 6, Nos. 45, 60, 65, 73, 74, 83, 97, 111, 112 and 117, all in the same township. In Troy Township, the Ohio Oil Co. abandoned Nos. 2, 3, 4, 5, 6 and 9 H. H. Rolfe farm, Section 24, and also No. 8 on the Andrew Polster farm, Section 36, Ross Township, all in Wood County.

In Sandusky County, Jackson Township, the Ohio Oil Co. abandoned Nos. 2, 3 and 4 S. A. Zimmerman farm, and Nos. 1 and 2 Rachel Zimmerman farm, all in Section 4. In Washington Township, the North Ohio Oil Co. pulled out Nos. 1, 2, 3, 4, 5, 6, 7 and 8 John Houtz farm, Section 31, and in Scott Township, the Ohio Oil Co. abandoned Nos. 1, 3, 8, 9, 11, 12, 14, 18 and 22 J. C. Forriter farm, Section 21, also No. 10 A. B. Taylor farm, Section 22.

In Hardin County, Cessna Township, the Appalachian Gas Corp. is drilling No. 2 Arthur W. Kreitzler farm, Section 2, and the Wiser Oil Co. is drilling No. 4 Grant Geiger farm, Section 12.

CENTRAL OHIO

Ashland County, one of the active areas of the Central Ohio Field, failed to report any new wells brought in, although some new wells were starting. The Appalachian Gas Corp., which purchased the Kemrow Co.'s properties recently, is drilling No. 1 on the Kent Welch farm, Section 7, Jackson Township. In Lake Township, Robinson and others are drilling tests on the Lewis Sprang farm, also on the J. M. Mosher farm, both in Section 18.

In Medina County, Chatham Township, Edson Sons Co. struck a 30-bbl. initial oil producer in No. 16 on the Marcus A. Frank farm, Lot 20, at from 416-77 feet.

In Lorain County, McMillan and others' No. 3 G. and N. Allen farm, Lot 89, Columbia Township, is a fairly nice gas producer at from 2,678-98 feet, which is the Clinton lime formation.

In Licking County, the Pure Oil Co.'s No. 8 Priest farm, Section 7, Hanover Township, is reported good for 37 bbls. in the Clinton lime from 2,783-2,824 feet.

In Muskingum County, Brush Creek Township, the Fritz Oil & Gas Co. found a fair gas producer in No. 1 on the Roy R. Pletcher farm, Section 4, at a total depth of 4,183 feet. The Atha Co. is starting a test on the Burton Townsend Co.'s property in the third quarter of Wayne Township.

In Athens County, York Township, J. J. Walters and others report a fair gas producer on the Nelsonville Foundary land, Section 17, at a total depth of 3,302 feet.

In Belmont County, Somerset Township, M. W. Fulton and others have a light gas well in No. 4 N. E. Slevin farm, Section 27, from 1,967-78 feet, in the Berea sand.

In Geauga County, McClay Brothers are drilling on the M. W. Fram farm, Section 12, Parkman Township.

Field Pickups

Eagan and others are drilling on the Katherine Selzer farm, Section 7, Green Township, Summitt County, from the Newburg to the Clinton lime formation, in hopes of getting a better output from the lower area.

The Ohio Fuel Co. has abandoned its location for No. 1-5,483 on the Harry Cartwright farm, Lot 73, Columbia Township, Lorain County.

Last report from the test of the Penn Oil & Gas Co., on the William H. Daily farm, Section 6, Jackson Township, Stark County, states the hole was down to 3,950 feet, and the Medford Oil & Gas Co.'s No. 1 John C. Easterday farm, Section 35, same township, had reached a depth of 3,910 feet, and same company's No. 1 Lantz & Clovis farm, Section 25, same township, was drilling at 3,100 feet.

The Local Oil Co.'s deep test on the J. W. Weaver farm, Section 3, Fairfield Township, Tuscarawas County, was shut down for pipe at 5,460 feet.

George Jewell and others are shut down in the Berea sand at 1,421 feet, with a very light showing of gas and are reported planning to send it down to test the Gordon sand on the Lillian C. Stewart farm, Section 29, Milwood Township, Guernsey County.

Perry Sturm and others reached 3,061 feet in their test on the H. T. McNulty farm, Section 22, Reading Township, Perry County, where a heavy dose of water was found and the hole will be abandoned. Mid-East Oil & Gas Co., drilling No. 2 Edward Brown farm, Section 11, same township, got the sand from 3,074-3,110 feet and went to a total depth of 3,114 feet. This well was estimated at 500,000 feet of gas when first drilled in. It flowed 25 bbls. of oil the first 24 hours and 30 bbls. the second 24 hours, and will be given a shot in hopes of increasing the output.

INDIANA

The most important development in the Indiana Field was the completion by the Ohio Oil Co. of a test on the M. G. Barrow farm, SW SE, Section 5, Benton Township, Monroe County, which is a fairly good gas well with 225 pounds pressure at a depth of 876 feet. The well is said to show slightly over 750,000 feet. The Ohio Oil Co., in connection with the Petroleum Exploration Co., is drilling on the Ray Ealy farm, S half SW NE, Section 5, same township. Saddle Creek Oil Co.'s No. 1 Durbin-Hessler farm, Section 4, Polk Township, same county, is reported shut down at the top of the Trenton lime.

James E. Young's venture on the Sarah Stansel farm, Section 23, Washington Township, Pike County, is reported dry at 935 feet. Same party is drilling No. 2 William Lamb farm, SE NE SW, Section 28, same township.

Wade Connelly is drilling 500 feet from the north line and 350 feet from the west line of the David Holden farm, SE NW, Section 29, Haddon Township, Sullivan County.

Five miles south of New Albany, along the River Road, Albertson and others are drilling on the W. H. Hile farm, in Floyd County.

Vanderburg Oil Corp. is drilling No. 3 on the George Hornby farm, SE, Section 32, Center Township, Vandeburg County.

Wyandotte Oil & Gas Co. is drilling 750 feet from the south line and 1,380 feet from the east line of the Day Lemmon farm, SE, Section 12, Boone Township, Harrison County.

ILLINOIS

The only completion reported from the Illinois Field was W. C. McBride, Inc.'s No. 4 on the John Magill farm, Section 3, Montgomery Township, Crawford County, with an initial production of 25 bbls. In Prairie Township, same county, the O. R. Oil & Gas Co. has a rig in for a second test on the O. H. Smith farm, Section 36.

In the Casey Field, Casey Township, Clark County, Tilford & Morrow are drilling on the W. B. Johnson farm, Section 36, and Stifal, Hammer and others are drilling on the J. C. Lawrence farm, same township.

MISSOURI

A deep test was made by the St. Elco Development Co. on the R. J. Cullie farm, in Survey 1,276, St. Ferdinand area of St. Louis County, drilling to a depth of 2,755 feet, but proved a failure. The well is 660 feet from the north line

(Continued on Page 84)

NEBRASKANS STILL SEEKING OIL AFTER 47 YEARS OF VAIN QUEST

OMAHA, Neb., Mar. 30. — For 47 years they have been trying to find oil and gas in Nebraska and they're still at it, but to date not a gallon of oil nor a foot of gas has been discovered. Thousands of feet of "hole" and millions of dollars have been sunk but not a cent in returns has been received.

But still Nebraska people hang on. They are unable to believe the boundary lines of the State were drawn in such a way as to exclude oil, gas, coal and other minerals, while the states on all four sides were given riches in all these commodities. On the east, Iowa with great coal deposits and Missouri with about every known mineral. On the south, Kansas with gas, oil and coal unmeasured. On the west, Colorado and Wyoming, each with vast mines of gold and iron, gas and oil and other minerals. On the north, South Dakota with its great gold mine, its oil and gas. And in the center of all these, Nebraska, without oil, without gas, without coal, without iron, without gold, without wood, and with its only source of wealth in its fertile soil.

One of the first attempts to discover oil in Nebraska was back in 1884, not far from the town of Kearney in Buffalo County. There was wild excitement and about half of Kearney used to drive out every day to see the "oil well." Kearney expected to strike oil anytime after the drill had gone down 100 feet. When it reached 1,000 feet without any indications of oil, cold feet developed. When the drill struck the 1,200-foot level and still no indications, frozen feet resulted and work was stopped. It has never been resumed. That is the first attempt to find oil in the trans-Missouri country.

The next attempt was four years later, in 1888. In that year the citizens of Hastings decided there was gas and oil under that city. A company was organized, a contract with a driller signed, and work commenced. There were the usual difficulties and eventually work was abandoned. Later, more money was raised and drilling again got under way. The only things found were one of the biggest flows of water in all Nebraska and a strata of yellow ochre. Nothing was done about either. The well was abandoned and its location forgotten.

Along in 1890 the town of North Bend made its bid for a place in the sun as the great oil center of the universe. One morning a blue iridescent film was discovered on a pool near town. The pool was fed by a spring. The film was petroleum. There was no mistake. There was the strong odor of oil. North Bend went wild. The next morning the film was thicker and the odor was stronger. North Bend went crazy. Half a dozen companies were formed. Drilling was going to start at once. Then, some boys whose fathers were getting ready to spend money, came forward and confessed. For fun they had dumped some kerosene into the pool. When they saw the commotion which followed their efforts, they added some more kerosene to the pool. They kept this up every night until things got so hot and they thought their parents were about to lose a lot of money. Then they confessed. And got paddlings. But no drills were sent down around North Bend.

Probably the most pretentious effort to find oil and gas in Nebraska was in 1916 when a Standard Oil subsidiary started drilling in Banner County, in the western part of the State. This company had all the financial backing needed. A hole was put down more than 5,000 feet and resulted in a "dry" hole. There were the usual rumors and reports that the drillers had struck oil and had capped the well—for speculative purposes. Leases were permitted to expire and the drillers never returned.

Three years ago, in "boom" days, drills were started in a number of different sections of the State. At one time drills were going down in 14 counties. But with the coming of "hard times," these drills were stopped.

Around Campbell, a well was put down, nearly $100,000's worth. Then it stalled. Another effort, nearby, was started, but for a year the rig has been idle.

Near Red Cloud a well is down 3,240 feet and the owners have sufficient capital to go on for several hundred feet more. But actual work has stopped, it is said, so that leases can be renewed.

Out near Imperial, in Chase County, in the extreme western part of the State, a well is down 4,000 feet and is to be sent still farther, but no work is under way right now.

In and around Omaha a company has been core-drilling for more than a year, getting a line on structures. Six or eight core-drillings have been made and the work is still under way.

But 45 years of prospecting have not yet produced a gallon of oil nor a foot of gas in Nebraska.

Direct Current in Oil Well Drilling

Efficiency, Small Amount of Water Required, Flexibility of Drive and Adaptability Stressed as Advantages Offered

By H. G. Dillon
Petroleum Engineer, Westinghouse Electric & Manufacturing Co.

The drilling of oil wells by electric power, where the energy is generated at the well by means of suitable generators connected to internal combustion engines, has many advantages. The efficiency of the engine, the small amount of water required, the flexibility of the electric drive, and its adaptability to this work, are the main factors winning favor to this new drive. The recent development of the high speed, light weight Diesel engine in sizes and capacity adaptable to this work, has provided an excellent prime mover for this service.

A number of installations have been made in the past where internal combustion engines have been connected to modern drilling equipment by mechanical means. The mechanical equipment employed has consisted of clutches, gears, chains and cog-belt drives. It is generally accepted that the overall full load efficiency of the mechanical drive is higher than it is possible to obtain with any electrical transmission. It is possible to obtain from 94 to 98 per cent efficiency in a mechanical connection, depending on the ratios involved and the type of mechanism used, while 85 per cent is probably the highest overall efficiency that may be obtained from the combination generator and motor hook-up. When these efficiencies alone are considered it appears that the engineer would be justified in classing the electric drive as undesirable. Full load efficiency figures are very misleading, and may not mean a great deal, depending entirely upon the nature of the work to be done.

If the load was continuous and of constant direction, horsepower, and speed, and concentrated at one point, probably the best method of power transmission would be the mechanical connection. However, if the load is reversing, is not continuous, and consists of various values of torque and speed, electrical transmission has advantages. Whenever an engine is connected to a load by mechanical means the ratio of the speed of the driven shaft to the engine speed is fixed in the gearing used. Different combinations of gears may be used to accelerate the load similar to the means employed in automobiles today, provided the load has sufficient momentum to carry it through the period while the gears are being shifted, and that the effort required to shift the gears is not sufficient to tire the operator. The average drilling equipment used has so little inertia that it is almost impossible to shift gears while engaged in the hoisting cycle.

Figure 1 Explained

A true comparison of electrical and mechanical transmission is shown in Figure 1, where the speed of the driven shaft is plotted in terms of per cent of full load engine speed against the torque exerted on the driven shaft in terms of per cent of full load engine torque. Curves are plotted for 100 per cent efficiency, 95 per cent efficiency and 85 per cent efficiency of transmission. The curves represent the hoisting cycle that might be obtained with an infinite number of shifting gears for each efficiency as indicated, from a 375 horsepower engine. The engine is assumed to be running 100 per cent normal speed and to exert values of torque up to 100 per cent normal torque depending upon the manner in which the engine is connected to the drawworks. The speed of the driven shaft and the torque exerted is varied by means of the transmission system through which the engine is driving.

The motor speed characteristic shown is that which may be obtained from a properly designed D.C. equipment being driven by the engine as shown. The shortcomings of the mechanical connections is best shown by considering the equipment to be operating on a hoisting cycle where the starting torque will be 200 per cent of full load torque with the normal running torque being 100 per cent of full load torque. With the mechanical transmission a set of gears must be used where the speed of the driven shaft would be limited to approximately 50 per cent of the normal full load speed and the torque exerted increased 200 per cent normal full load torque. This of course presupposes that the clutch will have sufficient capacity to accelerate this load at this high value of torque without stalling the engine. After the equipment has been accelerated to normal running speed it will then operate at point G (see Figure 1) with approximately one-half load on the engine. This represents the most serious handicap of mechanical drive in that no matter how the running torque may drop, the speed of hoisting is fixed by the gears used in starting and accelerating the load. The full load efficiency of the drive may still be 95 per cent but the engine will be operating at approximately one-half load and the load will be moving at approximately one-half the speed that it would move if the additional engine horsepower could be applied to it. With the D.C. motor drive the 200 per cent full load torque may be exerted at the start and as the load falls off the speed of the motor will increase so that with the conditions assumed above the driven shaft will rotate at approximately 85 per cent of normal full load speed. The engine at this point would be operating about full load and the load would be traveling twice the rate of speed that could be obtained by mechanical transmission. The most desirable drive is that drive that will apply the greatest portion of the total engine capacity to useful work regardless of the speed or the torque of that driven load. An apparently efficient drive that does not tend to keep the engine loaded at all times is not the most desirable.

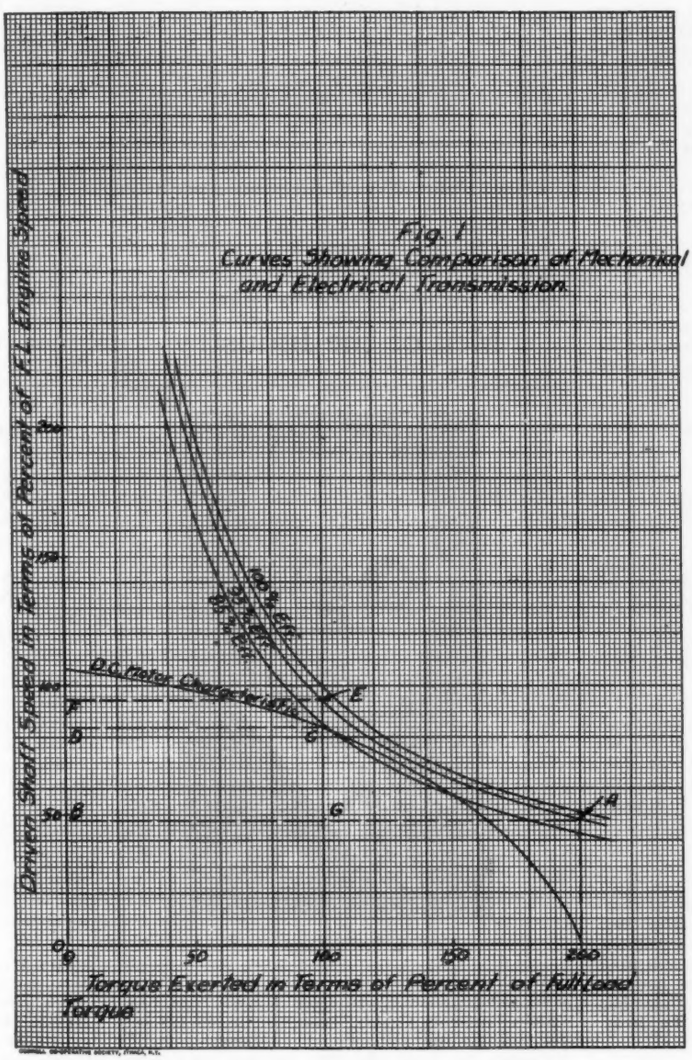
Fig. 1
Curves Showing Comparison of Mechanical and Electrical Transmission
Driven Shaft Speed in Terms of Percent of Full Engine Speed
D.C. Motor Characteristic
Torque Exerted in Terms of Percent of Full Load Torque
50
100
150
200

Advantages Cited

From the above it follows that a D.C. circuit, properly designed, will perform the function of a clutch and of an infinite number of shifting gears with fine speed control at all torques and speeds, permitting the engine to operate at a high load factor at all times.

These advantages, however, do not exactly apply to alternating current. In as much as the A.C. system is a constant voltage system, the torque exerted by the motor governs the current flowing in the circuit. It follows that the engine output is governed by the torque output of the motor. The A.C. equipment then takes the place of the clutch in the mechanical hook up and provides fine speed adjustment at any value of torque within the capacity of the engine without varying the engine speed. With alternating current it is possible to accelerate a 100 per cent load from zero to 100 per cent speed which is virtually impossible to do with a clutch.

With either equipment the clutch is eliminated and the engines may be installed at some distance from the rig not on part of the rig foundation, and it is not necessary that they be lined up with the rest of the equipment on the rig. This permits the engine and generator to be mounted on a portable base such as on an Athey Truss wheel trailer or on a barge and in any case the engine will not be subjected to the vibration of the drilling rig. With electrical drive it is a simple matter to utilize all of the power of the generating plant for the hoisting cycle. In other words it is possible to concentrate the full output of all engines to assist in handling long heavy strings of drill pipe.

From this it is evident that full load efficiency may not be the most important factor in the choice of a proper power transmission equipment. Ease of operation, convenience of speed control, and the ratio of available engine horsepower to the horsepower applied to the drilling rig are to be considered in electric power transmission.

Decision on Current

The decision as to whether direct current or alternating current power is best for any particular application should be made only after a careful study has been made of the work to be done by the equipment.

Alternating current has the distinct advantage of high load efficiency and low line losses when it is desired to transmit the power any great distance, as high transmission voltages may be used when required. If the total load is continuous, scattered over a wide area, or consists of a number of small equipments, alternating current would probably be most desirable.

With alternating current it is a simple matter to construct the equipment so that it may be safely operated in the presence of explosive gas by enclosing all parts that tend to form an arc in permissible type casing or to submerge the arcing part in insulating oil so that the gas will never reach the arc formed when the control is operating. Another distinct advantage of the use of alternating current is that a supply of power is available in nearly all parts of the world and the auxiliary generating equipment may be used in those localities where power is not available. When central station power is available at reasonable rates the alternating current drilling equipment may be operated from a transformer bank without a motor generator set, or any auxiliary equipment, and the generating equipment may be shut down. The generating equipment makes it possible to employ electric drive in any location whereas in the past electric drilling has been limited to those fields where central station power has been available.

Direct current has many qualities which make it well adapted to drilling service. These qualities as well as the problem involved in the application of direct current to the drilling rig will be discussed in the following paragraphs.

It is possible but very expensive to enclose all arcing parts in explosion proof cases but for drilling work the best system to follow would be to place the generator and the main part of the control

(Continued on Page 84)

Personal Paragraphs About Oil Men

R. N. Ferguson has been appointed general manager of the Bolsa Chica Oil Corporation.

* * *

E. C. Morarity, vice president of the Derby Oil Company, has returned from the new East Texas Field.

* * *

William F. Gates, of Independence, Kans., president of the Prairie Pipe Line Company, is home from a trip to the East Texas fields.

* * *

J. E. Rouse, of the Standard Oil Company of Indiana plant in Casper, Wyo., has returned from Chicago where he has been for a time on business.

* * *

C. V. Millikan, chief of the production department of the Amerada Petroleum Corporation, made an inspection trip to the Hobbs Field in New Mexico, recently.

* * *

George H. Jaques, vice president and general manager of Midwest Refining Company, spent a few days in the Casper, Wyo., offices from his headquarters in Denver, Colo.

* * *

Minal E. Young, former treasurer and general manager of the New York Oil Company, is looking after business in eastern Wyoming and western Nebraska for the North Central Gas Company.

* * *

R. T. Lyons, vice president of the Skelly Oil Company, in charge of the land and geological departments, and R. B. Rutledge of the geological department of the company, Tulsa, have just returned from a trip to West Texas.

* * *

Sir Robert Waley Cohen, K.B.E., one of the managing directors of the Shell Transport & Trading Company, Ltd., and director of several Shell-Royal Dutch subsidiaries, is resigning from the chairmanship of the African & Eastern Trade Corporation and the United Africa Company.

* * *

T. Dewhurst and A. Beeby Thompson have been unanimously elected as vice presidents of the British Institution of Petroleum Technologists for the ensuing year, and the following vice presidents, Sir John Cargill, A. E. Chambers, Alexander Duckham, Arthur W. Eastlake and Robert Redwood have been unanimously re-elected.

* * *

Thomas Clarkson J. Burgess has been appointed chairman of the London & Thames Haven Oil Wharves, Ltd., succeeding Lord Kylsant, G.C.M.G., who had held this post for more than 30 years. Mr. Burgess has also been associated with Compagnie Industrielle Maritime, which operates a large bulk oil terminal at Havre, France.

* * *

William D. Waltman, representing Franco Wyoming Oil Company, and Franco Western Oil Company, will transfer his general offices from New York to Suite 601, Edison Building, Los Angeles, Calif., on May 1. He will retain his offices at 9 Boulevard de la Madeleine, Paris, France, and 422 First National Bank Building, Denver, Colo. His new residence address will be Box 37, La Mesa, Calif.

* * *

Dr. Ralph B. Kennard, formerly head of the physics department of Robert College, Istambul, has been appointed a research associate of the Bureau of Standards, Washington, D. C., for research work in accordance with the provisions of the Luther B. McMillan Fellowship. The privilege of establishing and maintaining this fellowship as a memorial to the late Luther B. McMillan was accorded the Johns-Manville Corporation by the director of the Bureau of Standards shortly after the untimely death, in August, 1929, of Mr. McMillan, consulting engineer for the company and a pioneer in research in heat transfer problems. The associate research work to be conducted by Doctor Kennard will cover fundamental problems involved in the transfer of heat between solids and fluids.

L. L. Langworthy, formerly in the pipe line department of the Midwest Refining Company, has joined the North Central Gas Company.

* * *

Kenneth Eilerts, physical chemist at the United States Bureau of Mines, Bartlesville, Okla., is spending a two weeks' vacation at Oklahoma City, Okla.

* * *

Charles L. Reed, chief scout for Gypsy Oil Company in the Rocky Mountain states, has returned to his Casper, Wyo., offices from Denver, Colo., and Cheyenne, Wyo.

* * *

R. G. Stewart, president of the Pan American Petroleum & Transport Company, subsidiary of the Standard Oil Company of Indiana, has returned from a six weeks' trip to Europe.

* * *

Leo S. Briggs is now at Okmulgee, Okla., where he is assistant director of research for the Doherty Research Company. Mr. Briggs was formerly with the Combustion Utilities Corporation, Linden, N. J.

* * *

Walter Miller, vice president and manager of the manufacturing division, Continental Oil Company, has spent several weeks in the past month in New York and other eastern states attending company business.

Men of the Industry

W. C. Proctor

W. C. Proctor, treasurer of the Magnolia Petroleum Company, was born about 7 miles from New Castle, Lawrence County, Pennsylvania, on October 16, 1866. He was employed in the Emlenton Bank, Emlenton, Pa., from 1884-1885; and then entered the freight offices of the Baltimore & Ohio Railroad in Pittsburgh, Pa., remaining there until 1888.

Mr. Proctor's first experience in the oil business came in 1888 when he entered the service of the Ohio Oil Company in Oil City, Pa., where he remained until 1898. From 1898 he served with the J. S. Cullinan Company, Corsicana Refining Company, and John Sealy & Company until the Magnolia Petroleum Company was organized in 1911. He was elected treasurer of the new company on its organization and has held that position since that time. He was elected a trustee of the company in 1920 and became a vice president in 1925. He is active in the Presbyterian Church, in Y.M.C.A. work, is a Mason and Shriner, and is active in Dallas civic affairs.

Verne Fagin and Harold Vance, graduate petroleum engineers, have opened offices in Kilgore and Longview, Tex.

* * *

A. M. McQueen, vice president of Imperial Oil, Ltd., with headquarters at Toronto, is in Alberta conferring with officers of the company.

* * *

R. H. Milne, of Casper, Wyo., is to sail this month for Aruba, Dutch West Indies, to join the Pan American Petroleum & Transport Company.

* * *

J. Daly, of Denver, Colo., superintendent of operations in the Rocky Mountain region for the Texas Production Company, was a recent visitor to Casper, Wyo.

* * *

Wallace Gordon, division chief geologist for the Superior Oil Company of California with headquarters at Dallas, Tex., has been spending some time in West Texas.

* * *

Word has been received of the birth at Talara, Peru, on February 21, of a son to Mr. and Mrs. W. Dalton Hinman. Mr. Hinman is on the International Petroleum Company staff.

* * *

Dr. Benjamin T. Brooks, New York, is visiting in the Mid-Continent. He presented a paper before the Petroleum Group of the Oklahoma section of the American Chemical Society at Tulsa.

* * *

John A. Stumpf, for eight years with Henry H. Cross Company, has resigned to be associated with Chicago Oil Marketing Company which is moving into larger quarters at 59 East Van Buren Street.

* * *

Lloyd L. Davis, supervisor of the process division of the Continental Oil Company, has recently returned from a six weeks' visit in the East, attending company business. He also attended the D-2 Committee of the A.S.T.M. held in Baltimore, Md.

* * *

W. W. Scheumann, of Boston, Mass., has been appointed to take charge of Empire Oil & Refining Company's research and control laboratories. He succeeds A. L. Davis. The Empire's laboratories have a staff of approximately 40 chemists.

* * *

Robert W. Hendee, vice president, Oklahoma Natural Gas Corporation, has returned from an inspection trip of the company's properties in West Texas and the new pipe line from the Big Lake Field, Reagan County, to San Angelo and Girvin, Tex.

* * *

Bart Myers, superintendent of operations for Tropical Oil Company, with headquarters in Barranca Bermeja, Columbia, South America, has arrived in New York for a vacation. Mr. Myers was formerly superintendent of the Carter Oil Company operations in the Salt Creek, Wyoming, field.

* * *

Mrs. Wynne Merrill and two children, Murray and Jane, have returned to Petrolia, Ontario, from Negritos, Peru, owing to revolutionary conditions. Mrs. E. Howard and three children returned on the same boat and will visit at Sarnia; and Mrs. G. W. Currie and children are returning. The revolutionary disturbances somewhat affected the International Petroleum Company operations and all families were moved from Negritos to the seaport at Talara in February.

* * *

John G. Pew, vice president of the Columbia Gas & Electric Corporation, of New York, who has charge of the natural gas activities of that company, with Mrs. Pew, is in Los Angeles, Calif., on a visit. Notwithstanding it is claimed the California climate permits more days in which the ancient game of golf may be played, Mr. Pew made William Groundwater, director of transportation of the Union Oil Company of California, decide that he needed more practice if he ever hoped to hold his own against the New Yorker.

HALLIBURTON

"WE'LL Get There Somehow"—how the Halliburton crews have fought to maintain that famous slogan! The storms they have bucked, the roads they have conquered, the conditions they have overcome are all part of oil industry history.

The illustration shows a Halliburton cementing outfit being loaded on a barge on its way to a well in the Gulf of Mexico.

To receive your copy of "The Cementer" regularly as issued, sign and return the form below.

Place me on the list to receive THE CEMENTER as issued

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Natural Gas Industry Developments

NIAGARA GAS CORP. NATURAL GAS MERGER

The Niagara Gas Corp. has been incorporated in Delaware to acquire natural gas properties embracing about 70,000 acres in western New York in the Buffalo area. G. V. Grace & Co., Inc., are sponsors of the company, of which Michael M. Cohn of Buffalo is president.

The new company will combine the Shore Gas Co., Inc., the Erie County Gas Co., Inc., and the Alden-Aurora Gas Co., whose gas fields are tapped by the Columbia Gas & Electric and Cities Service systems. Additional acreage is under contract in Ontario, Livingston and Steuben Counties. Long-term contracts are held with utility and industrial companies in western New York. Further acquisitions are contemplated, it was announced.

LAREDO GAS RATES

LAREDO, Tex., Mar. 30.—The Laredo city council has passed an order giving the United Gas Co., owner of the Texas Border Gas Co. of Laredo, until May 5 to make a survey ascertaining production and revenues of the gas company and to report on the possibility of lower rates in Laredo.

This action was taken after the council had read letters from the gas company's office at Houston and also from the Texas Railroad Commission concerning the protest of gas consumers against rates paid in January.

The city council had under consideration an ordinance putting gas rates back to 50 cents per 1,000 feet instead of the present price of 75 cents, adopted in 1922, supposedly as a temporary measure, at a time when gas in the Laredo district was threatened with exhaustion.

GAS RESEARCH COMMITTEE

The natural gas department of the American Gas Association announces that the Main Technical and Research Committee's work on conservation of natural gas is being organized under the direction of Chairman H. C. Cooper. T. H. Kerr, vice president, Ohio Fuel Gas Co., has accepted the chairmanship of the Conservation Subcommittee on Distribution, and E. P. Hindes, chief geologist, Henry L. Doherty & Co., will be chairman of the Subcommittee on Conservation Data.

The department's Committee on Pipe Line Flow is now putting its report into shape. It is hoped to have the report ready for distribution at about the time of the Memphis convention. The committee has conducted investigations and tests of pipe line capacities over several years and in various parts of the country and its conclusions will be an important contribution in the research program.

COAL CONFERENCE

The Carnegie Institute of Technology, Pittsburgh, Pa., announces that a third international conference on bituminous coal will be held at Pittsburgh, November 16 to 21. The program will include papers on the carbonization liquefaction and gasification of coal, by-products, the mechanism of combustion, cleaning of coal and its preparation for the market, pulverized fuel, power plant and domestic heating.

SOUTHWEST GAS UTILITIES

Report of Southwest Gas Utilities Corp. and subsidiaries for year ended December 31, 1930, shows profit of $258,576 after interest, depreciation, depletion, amortization minority interest, but before federal taxes. This compares with profit before federal taxes of $433,256 in 1929. Stocks at close of 1930 consisted of 31,254 shares of $6.50 preferred and 171,912 shares of common, both no-par value.

DRILLERS ACTIVE IN AMERICA'S 100-YEAR OLD NATURAL GAS FIELD

DUNKIRK, N. Y., Mar. 28.—Gas drillers in Chautauqua County are interested in the big gusher struck in Tioga, Pa., last month. They are wondering if a gusher of this type will ever be found in the hills of this county. At present there are three major gas companies drilling for gas in this section of Chautaqua County. They are:

The Finance Oil & Gas Co., founded by the late State Senator A. T. Fancher, Salamanca, of which company Thomas Mills is now president, with headquarters in Gowanda. This company has extensive leases in the Perrysburg, Hanover and Nashville Fields.

The Republic Light, Heat & Power Co., a subsidiary of the Cities Service Co. with its principal office in Dunkirk, and which has several thousands of acres under long leases in Sheridan, Hanover, Evans, Brant, Arkwright, Westfield, Pomfret, Brocton, Farnham, Silver Creek and Villenova.

The Iroquois Co., Buffalo, which has extensive leases in Perrysburg, Nashville and adjacent towns covering a long term of years.

In addition to the above named companies there are also some half dozen small independent companies engaged in drilling in this territory. The Advance Oil & Gas Co. sells all of its gas to the Iroquois company, the gas being turned into the mains of the latter company as soon as a well is brought in.

At the present time the Republic Light, Heat & Power Co., which furnishes gas to Dunkirk and towns between Farnham, Westfield and the Chautauqua assembly grounds, is drilling two new wells in Hanover and Villenova; the Iroquois company, two in the Perrysburg Field, and Finance Oil & Gas Co., two in Perrysburg and Hanover.

A 15,000,000-Foot Gasser

Some good sized wells were struck by the above named companies last year. The biggest one was brought in by the Iroquois company on the Harvey Sanders farm in Perrysburg in September. It flowed at the rate of 15,000,000 feet a day. Earlier in the year, the Finance Oil & Gas Co. struck a well on the Phelan farm in the town of Nashville which had a flow of 13,000,000 feet a day, and in December the Republic Light, Heat & Power Co. brought in a well on the Phillip Parsell farm in the town of Hanover which was good for close to 500,000 feet a day.

Fredonia Pioneered in Gas

An added interest to the big gas well recently struck in Tioga has been created in Fredonia, which village enjoys the distinction of having first discovered natural gas in the summer of 1821. Turning back to the early history of Fredonia, it has been found that gas was discovered in bubbles from the surface waters of the Canadaway Creek. Tradition has it that when the early settlers applied a match to the bubbles in the stream the gas burned with a white flame tinged with yellow.

Later in the year the settlers used to lay stones in the creek to the top of the water, on which dry sticks were laid. In this way all of the driftwood was consumed. It attracted visitors from all over the State who wanted to see "the burning creek," by which name it was known for several years.

Lafayette Was Thrilled

Two years later the use of natural gas in Fredonia was started when experiments were made to determine its illuminating value. It was introduced into a few of the public places and the village tavern. The old building fronting Lafayette Park, and now known as the D. R. Barker Free Library, was illuminated when General Lafayette, of Revolutionary War fame, passed through Fredonia four years later as guest of the nation.

General Lafayette, who came back to the United States in that year to make a tour of this country as its guest, arrived in Fredonia late at night and was amazed to see the building illuminated with gas instead of tallow candlelights. As the general took his seat at the head of the tables, at which, besides others, there were 30 soldiers of the Revolution, 14 of whom were at Yorktown, he commented on the wonderful illumination of the building, something he had never seen before in his travels through Europe or the United States.

SEGREGATE APPLIANCE COSTS

WASHINGTON, D. C., Mar. 30.—The Public Utilities Commission of the District of Columbia has issued an order directing the Washington Gas Light Co. and the Georgetown Gas Light Co. to keep separate accounts of revenues and expenses incident to the purchase, sale and installation of gas appliances.

"The commission has studied this matter carefully," the order says, "and is of the opinion and finds that the cost of handling, displaying and marketing such appliances should not be borne by the consumers as a whole, nor taken into consideration in arriving at any rate to be charged for gas service."

The order directs the establishment of a new book account to include all revenue derived from the sale of merchandise and incidental work, and charged with the cost of the same.

LEWISTOWN GAS PERMIT

The city of Lewistown, Mont., by a vote of 265 to 75, has granted application of the Lewistown Natural Gas Co. for a franchise to deliver and distribute gas to the city. The company guarantees to have gas ready for distribution by November 1. Lewistown freeholders have granted two gas franchises, the first having been given to the Central Montana Utilities Co. in the fall of 1929. Armells Petroleum Co. has leases from which gas of Lewistown Natural Gas Co. will be produced.

MORGAN COUNTY FIELD

Further development of the Morgan County, Kentucky, natural gas field holdings of Wayne United Gas Co., subsidiary of Appalachian Gas Corp., is indicated by announcement by H. E. Danner, vice president, that seven new wells are being drilled. The new wells will bring the total to 65.

Wayne United Gas Co. recently completed a new compressor station at Grassy Creek and a new pipe line extending to West Liberty, Ky., to which the new wells will be connected.

TURNER VALLEY FRANCHISE

CHATHAM, Ontario, Mar. 28.—The council of the municipality of Turner Valley, Alberta, has granted a 10-year franchise to the McLeod Oil Co. to furnish natural gas for heating and domestic fuel. A monthly rate of $3.75 per stove with 10 per cent discount was agreed upon.

OHIO GAS AND OIL MEN RE-ELECT L. K. LANGDON

The following officers and directors were elected at the convention of the Ohio Gas and Oil Men's Association at Columbus, Ohio: President, L. K. Langdon, re-elected, Cincinnati, Ohio; vice presidents, Raymond Cross, Columbus, Warren Burns, Marietta; secretary-treasurer, William H. Thompson, Columbus. Directors: James W. McMahon, Toledo; Joseph Dallow, Lancaster; R. W. Gallagher, Cleveland; K. C. Krick, Columbus; John J. McMahon, Cleveland; E. A. Munyan, Cincinnati; P. W. Lupher, Columbus; James Burtner, Wooster; Emmett R. Curtin, Lima; T. C. Jones, Delaware; John Klise, Wooster; L. A. Seyffert, Columbus.

BORDER CITIES GAS RATES

CHATHAM, Ontario, Mar. 30.—G. F. Henderson, natural gas referee for Ontario, has fixed an interim natural gas rate for Windsor, Ontario, averaging 7 cents per 1,000 feet in advance of previous rates. This rate will hold good till the hearing of the application of the Windsor Gas Co., subsidiary of the Union Natural Gas Co., for a permanent rate increase, to be heard in March. The interim rates cover, in the charge for the first 5,000 feet, a ready to serve charge of 75 cents a month.

Over a year ago a municipal agitation was launched for a reduction of existing gas rates, upon which the company applied to the referee for an increase. Recently S. L. Springsteen, solicitor for the border cities, recommended acceptance by the municipalities of an increased schedule, and East Windsor, Riverside, Sandwich East Township and Tecumseh have since entered into an agreement with the company increasing the average rate from 64 cents to 70.8 cents and allowing a 75-cent a month service charge.

ALBERTA OIL INVESTIGATION

CHATHAM, Ontario, Mar. 30.—A committee appointed last year by the Alberta legislature to investigate the standardization of motor fuels and lubricants has made its report. The committee comprised Maj. H. G. L. Strange of Fenn, Alberta; Prof. James Fowler, Calgary Technical School, and Prof. Edgar Stansfield of the Research Council of Canada. The committee reports that the regulation by law of grades and standards for motor fuels and lubricating oils is not desirable, and that legislation should not go farther than the prevention of substitution. The committee recommends establishment of laboratory facilities for testing oils, and the furnishing to automobile and tractor owners of reports as to the most desirable grades and the proper use of fuels and lubricants.

GAS FOR HOPKINSVILLE, KY.

BOWLING GREEN, Ky., Mar. 28.—The Kentucky-Tennessee Light & Power Co. has secured a franchise from Hopkinsville, in Christian County, to furnish gas for the county seat early this summer. In January, Jordon & Curtis drilled in a gas well estimated good for 1,500,000 feet on the Crofton Negro School lot at a depth of 600 feet, indicating there is gas to supply Hopkinsville, with additional development of the field.

MITCHELL, NEB., FRANCHISE

The city council of Mitchell, Neb., has granted a franchise to the North Central Gas Co. to install and operate a natural gas distributing system in that city. A similar franchise was granted last summer to the Nebraska Public Service Corp., which proposed to bring gas from the Texas Panhandle to Mitchell.

Oil Industry Equipment and Supplies

LINK-BELT INTRODUCES 1931 GRIZZLY CRAWLER

The Link-Belt Co., Philadelphia, Pa., announces the 1931 model Link-Belt Grizzly crawler loader, which is fully described in Folder No. 1,256, just published. The 1931 Grizzly has the improved helical ribbon type feeder, announced in 1930, with its cast-steel spiral which digs, lifts and conveys the material to the buckets cutting a 7'-7" swath in the material handled.

The power plant of the Grizzly is a simple, compact and efficient unit, consisting of a 30 horsepower Buda gasoline engine, equipped with a governor to regulate the speed automatically; or a 20 horsepower electric motor of standard specifications. The elevator has a rated capacity of 1¾ cubic yards per minute, with uniform feed. A three-speed transmission gives the crawlers a speed of 30 feet per minute, or 66 feet per minute, in the digging direction, and 27 feet per minute in reverse. Driving machinery is housed in a dust-tight casing, partly filled with oil, which assures perfect lubrication of all parts.

FLUOR COOLING TOWER APPEARS IN NEW FORM

The Fluor Corp., Ltd., of Los Angeles, Calif., announces that new features have been incorporated in the Fluor cooling tower which increase its efficiency, as well as simplify and standardize its construction. The company explains that in redesigning the tower, expressions were obtained from customers as to features they would like to have included in a tower, and with this information as a guide, Fluor engineers and designers have produced a tower designed to combine these features.

The primary distributing system on top of the tower has been revised so that in place of the old flume and troughs, a pipe system is used in conjunction with a modification of the Fluor bowed type double-panel deck. This, it is asserted, gives practically perfect distribution of water and requires no adjustment, since there are no troughs to get out of level, and the growth of algae cannot affect distribution. Permanently uniform distribution, it is pointed out, means that all the surface provided in the tower is utilized, and the lowest possible temperatures are obtained.

Another feature, which most of the Fluor customers agreed was needed, was some kind of louver which would reduce spray loss caused by wind velocity, and the new Fluor tower has been designed with this in mind, so that it offers maximum obstruction to the water which is trying to get out of the tower, and yet does not prevent free circulation of air, which is so essential to efficient cooling performance. A detailed description of the new tower may be obtained from the company.

CHANGES BY CHAIN BELT

The Chain Belt Co. of Milwaukee, Wis., has announced a change in the personnel of the Cleveland, Buffalo, St. Louis, Portland and Seattle offices. Mr. Smallshaw, formerly in charge at St. Louis, took charge of the Cleveland office January 1. Thomas Cocker, manager in Cleveland, has been transferred to Buffalo as manager. Frank Gary has been transferred from Buffalo to St. Louis. On the West Coast, Hy Bergis has been transferred from Seattle to Portland, and Gerald Nichols of the Portland office will take charge in Seattle. W. F. Nichols continues as northwest manager.

TRUCK WINCH OF NEW DESIGN USED TO ADVANTAGE ON SMALL OIL WELLS

By L. G. E. Bignell
Petroleum Engineering Editor

In all oil fields of this country there are pumping wells that require frequent attention and the problem of providing such wells with power units suitable for both the pumping and cleanout requirements has long been one that has interested the lease men and the company production department.

If the power unit at the well is small enough to pump the well properly, it is not large enough to furnish power for pulling rods and tubing, or for cleanout work. It, therefore, has been quite common practice to install central powers to pump several wells and then use separate cleanout units, or to install at the individual well a gas engine or a motor large enough to serve the cleanout crews when the well is being serviced.

This latter condition necessitates the installation of a much larger power unit at the well than is needed most of the time and if this power unit is an electric motor the power costs are relatively higher. If the gas engine power unit is used, the power factor for it is very much under its normal rating for the greater proportion of the time and then it is perhaps overloaded for a short time during the cleanout work.

These conditions do not tend to keep production costs at their lowest limits and have long been recognized as detrimental to the operation of these small wells.

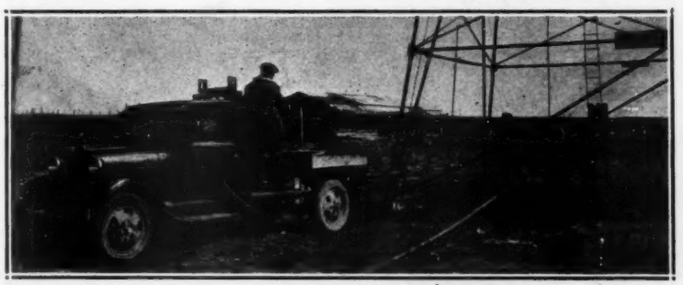
Engineers for the Tidal Oil Co., together with Carl White, Jr., of Tulsa, have developed a winch unit that can be mounted upon any standard truck and is powered from the truck motor through a special power take-off attached to the propeller shaft and thus gives as much flexibility to the winch as can be obtained by speed changes in the truck's transmission system.

The winch, named the "R. F." winch, mounted directly behind the motor cab, as shown in the accompanying pictures, is equipped with twin disc drum clutch; large brake drums and brakes equipped with equalizers; chain adjusters built into framework, eliminating the necessity of removing links or using idlers to take up wear; and a drum of large capacity for the wire line. The best of materials are used for all parts. Ten of the units are now in use and have been thoroughly tested out in several fields including Salyards, Kansas; Dewey, Nowata, Drumright, Morris, Osage and Tulsa County Fields, in Oklahoma. It is reported that these 10 units are servicing 1,750 wells.

Because of the fact that this unit can be mounted upon any available truck that has an engine of sufficient power to handle the load at the well, and still not affect the usefulness of the truck as a motor transport unit, the only actual investment is in the new equipment to be mounted upon the truck bed.

It has been found that the flexibility of the unit as so mounted is such that the cleanout crew can move about freely and in many cases increase the number of wells cleaned daily.

One special feature of the unit is the horizontal telescoping boom with block that extends out from the truck body toward the well and is so arranged that it can be chained to any member of the derrick conveniently located with relation to the crown block. The pull line is then strung from the winch through the block at the end of the boom, over the crown block and down to the derrick floor. The pictures show this hookup.



R. F. winch on Model "A" Ford pulling rods.

R. F. winch on 3-ton truck, showing relative position of winch, boom, block and derrick floor.

FLAME ANALYZER SHOWS HEATING EFFECT OF GAS

The Brown flame analyzer, recently developed by the Brown Instrument Co., Philadelphia, Pa., for measuring, recording and automatically controlling the heating effect of gas, consists of a special burner with thermocouples so arranged as to be variously influenced by the heat generated by the burner flame, together with equipment regulating the gas pressure to the burner. To the thremocouples is connected an instrument by means of which a record of the heating effect of the gas burned is continuously obtained.

It has been found that the heating effect of a given gas is directly responsive to changes in heating value, but it is influenced also by burner design, gas pressure, completeness of mixing with air, and rate of flame propagation. In the past only the heating value has been regulated and the rate of flame propagation has been permitted to vary. This new instrument is employed to regulate the heating effect. The rate of flame propagation and the heating value will be varied automatically so that the total heating effect is held constant.

The Brown flame analyzer can be used to control automatically the mixing of gases obtained from several sources to gain maximum economy as well as desired characteristics in the mixed gas delivered to the consumer.

The use of two flame analyzers in measuring and recording the gas to and from a gasoline absorption plant is a novel and effective means of continuously measuring the efficiency of the absorption equipment.

In oil refining much mixed gas is produced in connection with cracking units. In many cases it is desirable to know the quality of the gas. In debutanizing plants it is helpful to have a ready means of measuring the efficiency of absorption. In both these applications the use of the Brown flame analyzer is said to meet the requirements.

For large gas consumers it provides a constant and accurate check on the heating effectiveness of the gas fuel furnished, and affords a standard for checking the quality of the gas.

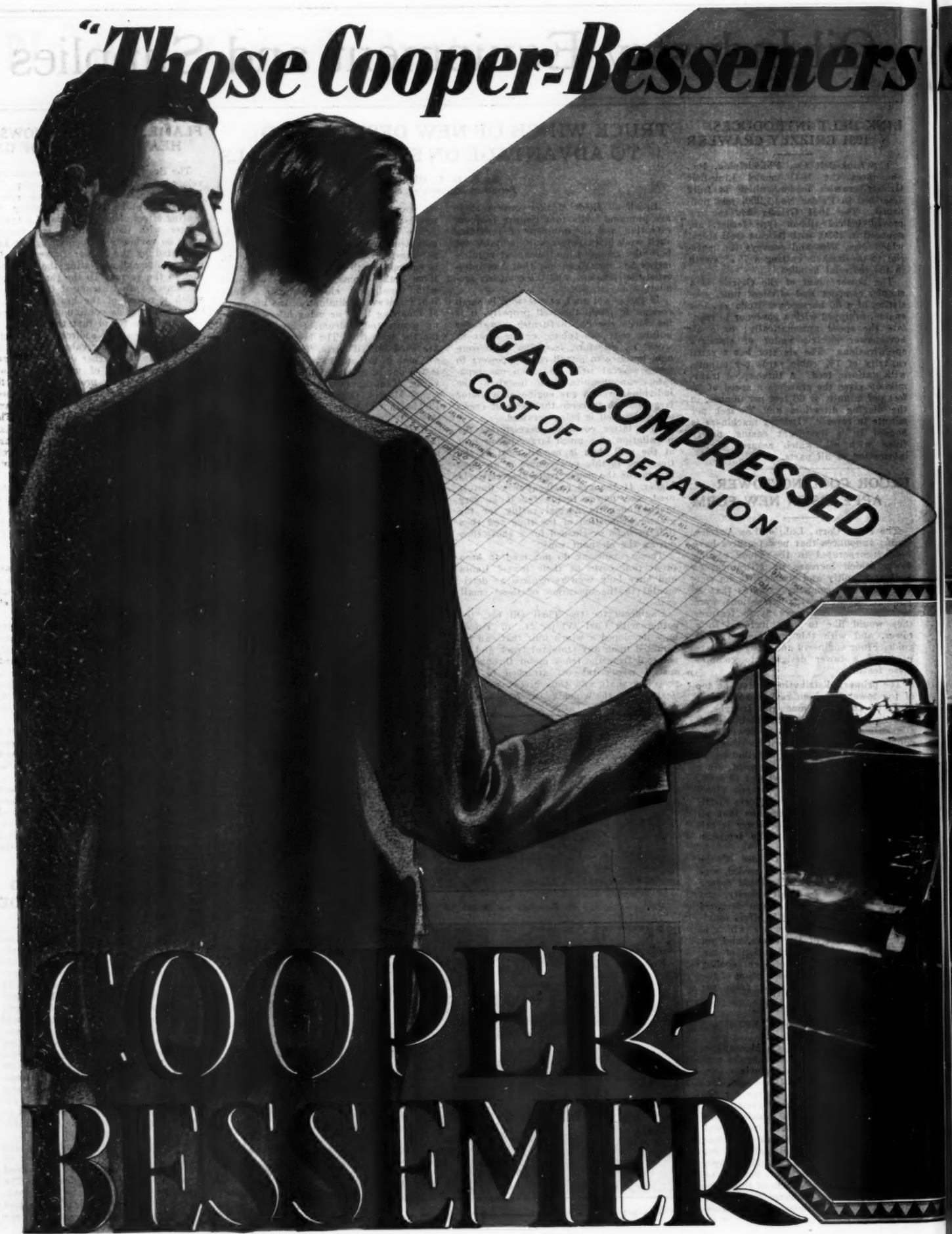
The flame analyzer will indicate how far the debutanizing process is accomplishing the end desired. The effect of butane on the flame is naturally to enrich it greatly and the flame analyzer is designed to measure continuously the efficiency of the process.

DUCTILE WELD OBTAINED WITH NEW GE ELECTRODE

The General Electric Co. announces a new heavily coated electrode, designated Type R, for quality welding. This particular type of electrode is composed of .13 to .18 carbon steel covered with a heavy coating of cotton braid impregnated with an arc stabilizing flux, and will be available in diameters ⅛" to ⅜"x18" length.

Metal deposits of this electrode will have high tensile strength and will produce a homogeneous structure resulting in a ductile weld. This is caused by the fact that, during the arc transference period, the metal is in a protective atmosphere because the electrode itself burns away faster than the coating and excludes those elements always prevalent in atmosphere which cause some undesirable results when an uncoated rod is used.

Extreme arc stability and high arc voltages permissible from this type of electrode produce an unusual high speed of welding for certain applications. The new electrode is expected to be of particular value in the field of pipe line welding where speed and ductility are essential requirements.


"Those Cooper-Bessemers
GAS COMPRESSED
COST OF OPERATION
COOPER-
BESSEMER

sure Push the Gas through

WHEN the chief engineer and the general superintendent look over a station monthly report, the first information they want is, "How many million cubic feet of gas did this station push through the line?"

The total usually gives them a feeling of satisfaction when Cooper-Bessemer Type-22's are on the job. It's the load-handling ability of these 1000 B. H. P. gas engine compressor units which makes them standard for large main line compressor stations.

"How much did it cost to handle the gas?" is usually the second question asked. Station men know from experience that these double-acting four-cycle engines do big jobs on a small amount of fuel gas and lubricating oil.

We believe that if you will visit one or two Cooper-Bessemer compressor stations, you will be convinced that Type-22's are the logical units for this service.

YOU'RE ALWAYS SAFE IN CHOOSING A COOPER-BESSEMER

THE COOPER-BESSEMER CORPORATION

MOUNT VERNON, OHIO GROVE CITY, PENNSYLVANIA

Oil Industry Equipment and Supplies

LINDE INTRODUCES NEW SHEET METAL BLOWPIPE

The Type W-107 welding blowpipe has been added to the Prest-O-Weld line by the Linde Air Products Co., New York, as an improved sheet metal blowpipe to be handled through Prest-O-Weld distributors. While this new blowpipe has been designed primarily for airplane fuselage welding, it is suitable for light welding work of all kinds. In design and appearance it is somewhat similar to the Oxweld type W-15 blowpipe, but it operates on the medium pressure principle. The gases mix immediately in front of the handle and the oxygen and acetylene valves are so located that they can be readily adjusted with the thumb and forefinger of the hand which holds the blowpipe.

The blowpipe is 10½ inches in length, weighs only 10 ounces and is perfectly balanced. Six different size tips are available for use with this blowpipe although it is furnished as standard with five tips, Nos. 2 to 6 inclusive. The blowpipe possesses advantages in operation as it is small and light so that it can be readily handled where fine and accurate work is required.

EQUIPMENT CONCERNS OF PACIFIC COAST COMBINE

The Victor Welding Equipment Co., with headquarters and plant in San Francisco, maker of the Victor welding and cutting equipment, and the Kimball-Krogh Pump Co. with plants in Los Angeles and San Francisco, have been merged into the Victor Equipment Co. Both Victor welding equipment and Kimball-Krogh pumps will continue to be sold under their trade-marks and the two original companies will be operated as individual divisions by the newly formed organization.

The object of this merger is to strengthen the engineering and research facilities; to enlarge the domestic and foreign sales fields; and to consolidate and expand warehousing, trucking and delivery service. A reduction in overhead expense is expected.

An analysis of the major users of the products of the pump division and of the welding equipment division discloses that both of the former institutions have sold and given service to the same major groups of industries.

Since 1877 pumps of the Kimball-Krogh division have been marketed internationally. The line of Kimball-Krogh pumps includes centrifugal deep well turbines, direct flow deep well turbines, horizontal centrifugals up to 100,000 gallons per minute, booster and circulating pumps, mine unwatering pumps, mine station pumps, tailings and sand pumps, vertical pit pumps, dredge pumps, etc.

L. W. Stettner, as president of the Victor Equipment Co., will be assisted by E. L. Mathy as vice president in charge of sales promotion and advertising, George Pennington as vice president and general manager of the Kimball-Krogh division, Ronald Schlegel as vice president and assistant to Mr. Pennington, and by William Fulwider, secretary, in charge of accounting.

With three factories and three company owned stores and warehouses, besides trucking and installation facilities, the new company's ability to give prompt and efficient service is believed to be assured.

The Hills-McCanna Co., Chicago, is mailing a broadside on the Kam-Klutch or ratchet drive.

AMONG THE EQUIPMENT HOUSES

Matt Berg, president of the Tractor Truck Equipment Co., has obtained a long lease on the showroom and warehouse at Frankfort Avenue and East Fourth Street, Tulsa.

Clement Wells, president of Sarco, Inc., New York, recently started a trip designed to embrace oil companies of the Mid-Continent area. The Federal Steam Specialties Co., Oklahoma City, is distributor for Sarco.

The Westinghouse Electric & Manufacturing Co. has appointed J. B. MacNeill general manager of distribution engineering with headquarters in East Pittsburgh, Pa. This group comprises the engineering activities on switchboards, circuit breakers, meters, relays, high tension insulators and lightning arresters.

Neilan Co., Ltd., manufacturer of automatic controlling and regulating equipment, has appointed William T. Mayer manager of its San Francisco office in the Crocker Building. Mr. Mayer is widely experienced in public utility engineering and butane plant design.

National Transit Co. and its subsidiaries for the year 1930 showed a net income of $609,400.87, according to the annual report issued Saturday. During the year dividends of $509,032.50 were paid which allowed more than $100,000 to be added to the surplus. On December 31, 1930, this surplus totaled $3,230,269.59, according to the statement.

R. B. Millard, refinery engineer with the Southwestern Engineering Corp., has been sent to Paris to take charge of the company's office there. Mr. Millard was district manager for the Southwestern in the Mid-Continent area for the past six years.

The General Refractories Co. has appointed the Davis Coal & Supply Co. of Reading, Pa., as distributor of Grefco and Standard high-temperature mortars and its Pennsylvania fire clay brick. The territory will include Schuylkill, Berks and Lebanon Counties and the northern part of Lancaster County.

The International Derrick & Equipment Co. is opening a store in Kilgore, Tex. W. A. Jesson, formerly in charge of the Ideco branch in Oklahoma City, has been transferred to Kilgore along with Don DeWar, Ideco field engineer, formerly located in West Texas. The Kilgore store will handle a complete line of oil well equipment, including Ideco derricks, rotary equipment and pumping units.

Alco Products, Inc., division of the American Locomotive Co., has opened branch offices in the Esperson Building, Houston, Tex., and in the Philtower Building, Tulsa. R. H. Brinton will represent the company in Houston, and T. B. Leech in Tulsa as sales engineers for refinery installations and heat exchange equipment.

Two Diesel agencies have been added to the Cooper-Bessemer Corp.'s list. One is the Pacific Marine Supply Co. of Seattle, Wash., and the other is Hoffers, Ltd., of Vancouver. The Seattle organization will serve Washington, Oregon and Alaska. Hoffers will act as agent throughout British Columbia and British Yukon.

The Link-Belt Co., Chicago, has made the Stockland Equipment Sales Co., 2628 University Avenue, SE, Minneapolis, Minn., shovel-crane-dragline agent in Minnesota, excepting a few counties around Duluth, and part of central west Wisconsin. J. W. Chapman is general manager of Stockland.

NOTES ABOUT TRADE LITERATURE

A folder from Gray-Burton, Inc., Galveston, Tex., describes and illustrates the Gray-Burton valve.

"Heat Goes to work for you at Sivyer" says the current issue of Sivyer Reports, published by the Sivyer Steel Casting Co., Milwaukee and Chicago.

"High Cost of 'Cheap' Paint" is among interesting articles in the current number of "Dutch Boy Quarterly," published by the National Lead Co., New York.

A 32-page illustrated catalog in colors, being distributed by the Caterpillar Tractor Co., Peoria, Ill., is devoted to the Caterpillar 60 leaning-wheel grader.

The eight-page Hyatt "Rollergravure," published by the Hyatt Roller Bearing Co., Newark, N. J., shows interesting installations of Hyatt-equipped products.

Bulletin 101, obtainable from the United Air Cleaner Corp., 9705 Cottage Grove Avenue, Chicago, gives detailed information about the United Imperial air cleaner.

The March-April number of "The Lufkin Line," published by the Lufkin Foundry & Machine Co., Lufkin, Tex., is designated as the California Exposition number and its contents deal especially with the exposition and with California oil operations.

A "Pictorial Panorama of Progress" in the use and application of nickel steel in various industries is presented in a four-page publication issued by the International Nickel Co., New York.

"Replace—don't reface," advises the Associated Clutch Plate Manufacturers, Chicago, in a 24-page booklet presenting "recommendations of leading authorities on clutch service which has been proved practical in service by the actual experience of motor maintenance men."

The Oster Manufacturing Co. of Cleveland, Ohio, has issued a new catalog covering a complete line of pipe threading tools and machines. The new book is of the standard size, loose leaf, and contains complete information on the extensive line of Oster equipment.

A. C. F. Milliken valves for handling gasoline, oil, water, steam, boiler blowoff, air, vacuum, gas, chemicals, etc., are the subject of a 24-page illustrated catalog distributed by the valve division of the American Car & Foundry Co., Detroit, Mich.

A new catalog published by the Brown Instrument Co., Philadelphia, Pa., describes Brown electric CO_2 meters, which are said to provide a measuring appliance which combines convenience, accuracy and freedom from maintenance troubles to an extent hitherto unapproached.

DEVICE TAKES MOISTURE OUT OF GAS AND VAPORS

The Moorlane drip has been developed, according to its manufacturer, the Moorlane Co., Tulsa, as a simple, practical and economical separator, designed to extract all entrained moisture from gas, air or vapors, immediately removing this moisture from the path of flow and collecting the condensate in a reservoir from which it can be trapped or blown from the line. With this device there is said to be no more pressure loss from inlet to outlet than in an equivalent length of line. The free vane area is greater than the pipe area.

As gas or vapor passes through the vanes it is separated into thin parallel sheets, from which moisture is stripped by centrifugal force, wiping action and impingement. All the moisture is extracted before these divided sheets of gas are allowed to mix again with the main stream. There are no right-angle turns or bends in the gas passage through the vanes. The gas is said never to deviate more than 30° from straight-line flow, which contributes to low pressure loss through the drip.

All the moisture stripped from the gas is pocketed immediately and removed from the path of gas flow. Ample storage, undisturbed by any gas flow action, is provided for in the liquid reservoir. Any necessary amount of liquid stotage space can be obtained by extending the length of the shell. Moorlane drips can be used as drips in gas lines, de-mistifiers after absorbers, scrubbers ahead of compressor stations, gasoline accumulators, exhaust steam separators, etc.

REPRESENTATIVE WATER SAMPLE IS OBTAINABLE

The sampling of steam and water at various points in the power cycle has come to be a necessity in modern power plant operation. Samples are taken to determine the quality of water supply; to control the method of treatment, for the prevention of corrosion and scale formation; to control boiler concentration; to minimize wet steam, foaming and priming, and to detect and measure condenser leakage.

To obtain truly representative samples it is important to provide adequate cooling of the hot sample to room temperature while still under pressure. If this is not done, a nonrepresentative sample will be obtained owing to the "flashing" of the water samples drawn off.

A method of obtaining representative test water samples is offered by the Bailey Meter Co. of Cleveland, Ohio, in the Dieform test water cooling coil. These coils, which consist of a tube within a tube, are made from copper tubing and Dieform compression fittings. In operation the hot test sample enters the smaller inner tube at the top while the cooling water enters the outer tube at the side outlet on the bottom. Cooling water completely surrounds the inner tube as it passes upward through the annular space between the tubes to the side outlet at the top. This type of test water cooling coil is said to perform at maximum efficiency because of the counter-flow principle which tends to equalize the rate of heat transfer throughout the entire length of the coil. It also has an added advantage owing to the upward flow of cooling water in that a supply of cooling water always surrounds the inner coil regardless of how slowly water flows through the outer coil.

Dieform test water cooling coils are being used to get boiler water samples, steam manifold samples, evaporator samples, turbine samples and water samples at boiler feed pumps, feed water storage tanks and purifiers.

EAL

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QUIPMENT

HE
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PANIES

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

GEOLOGY AND WILDCAT WELLS

I am writing to you regarding a much discussed point with relation to wildcat wells. What percentage of wildcat wells drilled under the direction of geology came into production? It is my understanding that within the last 10 years marked advancement has been made among petroleum engineers in forecasting the probable result of a wildcat drilling venture and without doubt the scientific information which geology is able to furnish in advance of a well's location has much to do with taking the risk out of wildcat operations.—H. W. T.

It is quite well established that geology has reduced the number of wildcat wells materially, for although a geologist does not pretend to tell definitely where to drill to obtain oil, the science of geology does make it possible to tell where the chances of finding petroleum are negligible and therefore advises his client not to drill.

It is also a fact that the science of geophysics has advanced so that it is now possible to map an underground structure quite definitely, but it is still impossible to tell in advance of drilling whether the structure is charged with oil or gas.

There are many pseudo-geologists making claims that by the use of their instruments and methods they can predict in advance of drilling whether a structure contains oil and gas but none of these methods appears to be based upon any recognized scientific laws and in nearly every instance depend for their supposed results upon the manipulation of the instrument by the inventor himself only. It is far safer to take the advice of a reputable geologist using what are recognized as well established methods, than be led by vague promises and predictions of men who are operating instruments surrounded by mystery.

Not being able to say definitely in advance of drilling whether the structure is charged with petroleum the geologists can only advise in a limited way. There are other conditions too that influence the drilling of the so-called "wildcat" wells and this is perhaps best illustrated in the data given in the following table:

WELLS DRILLED IN UNITED STATES

Year	Oil	Pct.	Gas	Pct.	Dry	Pct.	Total
1924	14,587	66.7	2,257	10.3	5,044	23.0	21,888
1925	16,559	64.6	2,330	9.1	6,734	26.3	25,623
1926	19,013	64.8	2,341	8.0	7,965	27.2	29,319
1927	14,442	59.8	2,491	10.3	7,210	29.9	24,143
1928	12,526	56.1	2,727	12.2	7,078	31.7	22,331
1929	15,572	59.1	2,870	10.9	7,914	30.0	26,356
1930	11,577	54.7	2,885	13.6	6,703	31.7	21,165

This table, which was prepared by C. H. McNeese, statistician for the Continental Oil Co., shows that in 1930 the percentage of dry holes drilled was as high as in any year covered by the data. This does not mean that the geologist was to blame, for a great many blocks were drilled because the leases were expiring and it was necessary to determine whether the acreage would be productive.

While your question cannot be answered in a definite way it is safe to recommend the use of the services of a geologist in an advisory capacity in connection with the drilling of any acreage. The major oil companies all maintain geological staffs and they must have been found profitable or they would not have been continued.

GAUGING LEANING OIL TANKS

If a round oil tank were set out of level, or not perfectly upright, would it hold more oil per foot for pipe line purposes than if setting level?—L. G. M.

This interesting problem at first looks as though it would be complicated, but as you limit it to "pipe line purposes" it becomes fairly simple.

If the tank were set at any angle to the horizontal within the limits of drainage to the pipe line connection, there would be no need for making any allowances for this angularity because the oil level within the tank would always be parallel to the horizontal line formed by taking as a datum line the level of the oil within the tank when it had been drained to the pipe line level.

As the oil and sediment below the pipe line level do not enter into measurements pertaining to the depth of oil in a full or "empty" tank, the angle of the bottom of the tank has no bearing upon the gauging of it.

For instance, the pipe line connection is 12 inches up from the bottom of the tank, and to prevent air from being drawn into the pipe line it is the gauger's practice to shut off the cocks to the pipe line when the oil level within the tank is 1 foot 2 inches above the tank bottom.

This measurement of 1 foot 2 inches being established, any level of oil above that line will represent a true cylinder of oil because the measurements are always taken at one place in the tank. If the full measurement of the tank should be 8 feet 2 inches, there would then be 8 feet of oil in the tank even if the tank were setting 2 inches out of level.

It is so difficult to set tanks perfectly level that it has always been pipe line practice to disregard this detail in strapping the tank, but it is necessary that the tank always be gauged at one point, and this gauging usually is done at a point close to the pipe line opening.

So for pipe line purposes no allowance is made for the angularity of the tank bottom, but if it should be necessary to drain the tank completely and estimate the amount of oil or sediment in the bottom of the tank below the pipe line connection it would then be necessary to give consideration to that angle which would be formed between the bottom of the tank and a horizontal line passing under it.

CAN IT INJURE THE WELL?

What harm can come to a well that is supposed to be free of paraffin by producing that well, especially under flowing conditions, with the tubing near the bottom of the well, so that the face of the lime or sand is not working against a fluid head, taking into consideration that maximum daily production is desired?—O. K. M.

Much might be said in connection with this question, for various things about underground conditions in an oil well must be assumed, since no one yet has been able to examine sands in place. It is quite natural to assume the formation of paraffin on the face of the sands because it is well known that with change in pressures and temperatures the heavy portions of the oil will congeal, but to what extent this will reduce the well's production is dependent largely upon the particular well.

While men have not been able to penetrate into the earth to sufficient depths to observe the oil in place in oil wells, they have been mining oil sands for many years and it is pretty well established that the heavier portions of the oil will congeal at the face of the sands and plug the pore spaces. For this reason it is common practice in oil mining to remove the face of the sand exposed as the flow of oil becomes less and in this way expose new sand bodies to drainage. Therefore it may be reasoned that to lower the level of the fluid in the well below the face of the oil sands will tend to cause paraffin to deposit on these sands so exposed and in this way retard the flow of oil.

However, if the gas lift is being considered it must be remembered that one of the first requirements is that there shall be sufficient pressure within the sand to permit the gas pumped into the well to exert its energy in lifting the oil to the surface, and not dissipate this gas into the sands and thereby retard the flow of oil to the well. In other words the differential pressure of the oil sands must be greater than the pressure required to lift the oil to the surface and if this is the case there is hardly any reason to assume that the face of the oil sand will ever be exposed and the gas lift operate upon fluid at low level in the well.

If the well is pumped it is possible to lower the fluid level so that part of the sands may be exposed, but as to the amount of damage such practice will result in will depend largely upon the well.

In one district in Oklahoma operators actually have drilled holes below the bottom of the producing sand in which the daily production has been accumulated. The tubing has been lowered into this "sump" hole and the well pumped from a point below the base of the sand body. It is not known whether this practice has resulted in the sands plugging with paraffin, but it has been reported that in some instances the wells have shown an increased production of oil when handled in this way.

It is hoped that these answers will aid you with your problems, but in the main it is not possible to formulate general rules for the production of wells for it does seem that each well presents its own particular problem and experience with it is about the only method of learning what is the best practice to follow.

WHY WAS IT CALLED THAT?

GRIEFSTEM

The griefstem used in rotary drilling is a square pipe which passes through a hole in the rotary turntable and to which the upper end of the rotary drillpipe is attached. As a result of its being square it rotates the string of drill-pipe in the hole when the turntable is driven. It is supposed that the rending, crushing character of the work it performs—that is, the "grief" it undergoes and causes—led the driller to call it the griefstem. It is known also as the "kelly," perhaps because Kelly was reputed to be a hard man.

SETTLING TANK FOR WATER

I would appreciate any suggestion you might be able to give me for some means of removing dirt and impurities from river water that is to be used in a refinery. I know of course that water purifying systems can be installed by companies in that business, but it has occurred to me that the same end could be accomplished about as efficaciously without going to the expense that these systems involve.—U. N. Y.

It may not be out of place to repeat here that old one to the effect that you can't get something for nothing. Any water purifying system that you employ is going to demand some outlay, and it probably would be within the truth to say that the amount of the outlay (assuming of course that it is made with ordinary business sense) will be a fair measure of the efficacy of the system. The water purifying systems offered for refineries, etc., are reported to do their work well and there is no reason for believing that their cost is excessive in the light of the service they give.

However, you have asked for a suggestion concerning the possibility of a sort of homemade water purifying system, and this department probably can do no better than refer you to the device installed by the Producers & Refiners Corp. to purify the water needed in its 8,000-bbl. refinery in Parco, Wyo. The company has utilized four rings and the bottom of an old 55,000-bbl. crude storage tank. Besides meeting the requirements of the refinery the company supplies water to the town of Parco, most of whose adult male residents are refinery employes.

Two rings and the bottom of the tank were used for the water tank. This gives a capacity of approximately 750,000 gallons. The plates comprising two more rings were used in building baffles within the tank to form a labyrinth. The baffles are arranged so that the water entering the tank first passes around the outer set of baffles, then past a second set inside the first. Then the water goes to a compartment in the center of the tank, from which it is taken by suction.

The water, obtained from the North Platte River, carries much sediment and it is treated with alum, sodium aluminate and chlorine. The water is charged to the settling tank through a mixing drum by means of a centrifugal pump. From the settling tank the water is pumped 6 miles to the plant.

The water requirements of the refinery and town vary from 500,000 gallons daily in winter to 1,500,000 gallons in summer. The sediment settles out of the water before entering the center circle from which the supply is obtained. Provision is made to draw off the sediment and clean the tank when necessary.

Any person undertaking to make a similar settling tank would have to see the original one to understand the mechanical details clearly.

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TREAT CUT OILS BY SIMPLE CHEMICAL METHOD IN SMACKOVER, ARK., FIELD

By C. W. Fornes
Engineer, William S. Barnickel & Co.*

The purpose of this paper is to familiarize anyone interested in the treating of Smackover pumping well production with the very simple method of treating this particular oil with chemicals, and for this reason I have purposely avoided being technical.

There are, of course, several different methods of applying chemicals to the oil under treatment, such as lubricators, force-feed pumps and through treating pump suction line, but from an economical standpoint it has been definitely determined that applying the chemical into the well itself through the casinghead is far superior to all other methods. This method of treating oil is known as the prevention process or down-the-hole treatment.

It has also been determined that the application of chemical in batches, that is, injecting a given amount of chemical solution into a well once or twice each day instead of constantly feeding a small amount of solution into the well, produces a treatment that is quite satisfactory.

One of the greatest advantages of the down-the-hole treatment is that no heat is required in order to get a good treatment. Also, less chemical is required than when the oil is treated on top of the ground.

It is not necessary to inject chemical solution into all wells; as a matter of fact the usual procedure is to treat only about half the wells that are pumping into the same settling tank or gun barrel. The important thing is to determine which wells to treat. This is easily done by centrifuging each of the wells and treating those that have the highest percentage of emulsion or basic sediment.

When wells are under vacuum the chemical solution is applied through small apparatus including a copper tube that extends into the well casing 4 feet below vacuum line, the vacuum on the well pulling the solution into the well. In order to prevent the solution from passing out through the vacuum line, valve on vacuum line is closed while chemical is being applied.

On wells where pressure is maintained on casinghead, chemical solution is applied by means of a small hand pump made from a grease gun or tire pump, using the same copper tubing assembly to prevent the solution from passing out through the gas line in the event gas is being taken from the casinghead.

On wells on which neither vacuum or pressure is maintained, merely being open to atmosphere, all that is required is a bucket or a can and chemical solution is simply poured into well through casinghead.

The cost of equipment for applying chemical solution down the hole where vacuum or pressure is maintained on wells is about $2 per well.

When treating down the hole wells are pumped into settling tanks or gun barrel where water settles out, the clean treated oil going into stock tanks.

It does not seem to matter how much water a well makes in treating down the hole as the amount of chemical used is based on the amount of net oil the well produces.

There are some rare instances where the down-the-hole method of treating is not successful, namely, on wells making a great deal of gas through the tubing and on wells which are allowed to run after they have pumped off. Both of these conditions can, of course, be corrected.

On wells that make a large amount of gas through the tubing the great amount of agitation and turbulence that takes place in the tubing causes the oil and water to re-emulsify even after the chemical is added.

The constant churning of the fluid left in the tubing on wells that are permitted to run after they have pumped off makes an emulsion that is not susceptible to down-the-hole treatment. The chemical must be applied in the form of a fresh soft water solution. The strength of the solution may be from 5 to 25 per cent with equally satisfactory results.

The proven advantages of the down-the-hole treatment are: No heat is required, resulting in fuel economies and eliminating investment for heating apparatus and upkeep of same; minimum investment for treating apparatus; simplicity of operation, practically no attention required; assured results.

*Paper read before the El Dorado, Ark., chapter of American Petroleum Institute.

WEST TEXAS CUT OILS YIELD TO SCIENTIFIC CHEMICAL TREATMENT

By W. P. Curran
The Tret-O-Lite Co.*

The two acknowledged methods of crude oil dehydration used throughout West Texas and New Mexico are electrical and chemical. This paper, however, will deal solely with chemical dehydration.

Water traps or so-called "water knockouts" which were used widely until recently were not a method of treating but a preventative, separating the water before reaching the choke, allowing clean oil to pass without cutting.

At the outset it is necessary to determine the proper compound to be used on the oil to be treated as there are many kinds of oil varying in gravity from 19 to 42 degrees, being both paraffin and asphalt base. Over a period of years a number of different compounds have been developed for various oils and at this time no less than seven compounds are used by us in this district.

The proper compound is arrived at by carefully run tests in the field and by laboratory tests run at the laboratory on oil sent in from the field for that purpose.

There are two types of emulsions to be treated, oil in water and water in oil. However, water in oil emulsions are the general type found throughout this section. Oil in water are found in some instances in the northern Rocky Mountain district and the regular dehydrating agents have no treating qualities on this oil.

Emulsions are caused by the presence of water with the oil and agitation by gas or pressure or faulty pumping equipment.

Most of the oil throughout this section cuts very fine. In other words, the particles of water scattered through the oil are extremely small. With this type of emulsion it is necessary after the chemical is introduced that the oil have as much agitation as possible in order that the chemical become thoroughly mixed with emulsion.

It has been found, where possible to use it, that down-the-hole treatment gives cheaper and more thorough treatment than practically any other method. There are, however, few places where this method is practical in this district.

Where it is impossible to use down-the-hole treatment it is advisable to introduce the chemical as closely to the well as possible. If introduction can be made on the high pressure side of the flow bean much better mixture can be ob-

(Continued on Page 87)

*Read before Wink, N. Mex., chapter of American Petroleum Institute.

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Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

CLAY TREATMENT FOR TAR SEPARATION

Do you know of any American publication dealing with clay treatment for tar separation? If so, we would be glad to know where it may be obtained.—K. W. N.

I do not know of a book which deals exclusively with clay treatment for tar separation. The actual removal of tar or asphalt from petroleum is commonly in the form of a concentration in the residue after the lighter products have been driven off by distillation. Small quantities that may be incidental impurities, influencing color, gum content, etc., are extracted from the lubricating fractions—occasionally the light oils—by filtering through fuller's earth and by treatment with acid.

A patented process makes use of clay treatment in the vapor phase. A recent article on the subject is that of Gerstenberger and Goode, The Oil and Gas Journal, March 5, 1931, page 140. This operation is described as follows on page 219:

"Beyond the dephlegmators is a 6'x40' bubble tower which breaks up the pressure distillate vapors coming from the dephlegmators into gasoline and gas oil. The gasoline vapors leaving the bubble tower run a little over 400° endpoint. From the bubble tower they pass through the clay tower. Superheated steam is used in the bottom of the bubble tower to strip the gas oil of all the gasoline fractions possible. The quantity of steam used depends upon the operation of the clay tower, and consequently the gas oil leaving the bubble tower contains about 15 per cent of heavy gasoline ends. This gas oil is passed through a bubble tray reboiler and the remaining gasoline is removed, giving a final product with a 415° F. to 420° F. initial boiling point. The heavy end gasoline is used back over the bubble tower and dephlegmators for reflux.

"The clay tower is 10'x30' and contains 30 tons of clay. The vapors pass downward and the separated polymers drop out the bottom and are refluxed back over the bubble tower. The gasoline vapors leaving the clay tower pass through a knock-out tower and a final bubble tower where, by a small quantity of reflux, an endpoint of close range is maintained on the gasoline, at the same time insuring that the gasoline is polymer free. About 150 gallons per hour of the finished gasoline stream is washed back over the clay tower which prevents the retention of separated polymers in the clay."

EXHAUST STEAM AND JET CONDENSERS

We are exhausting into the air daily 600,000 to 1,000,000 cubic feet of steam at 210° F. that we wish to condense in the most economical manner by atmospheric means to eliminate the heat load from the cooling tower. Would it not be feasible to jet this steam into a 4'x48' absorber and thus accomplish our purpose? Placing a 2"x12' joint of pipe over a 1-inch high velocity steam discharge line it was noted that a tremendous condensation took place. Would a similar system if of sufficient size and length effect total condensation? Has an atmospheric condenser of the jet type ever been used?—H. C.

The cooling of steam and liquids is simply a matter of heat transfer; enough of the cooling medium must be furnished to accomplish the desired lowering of temperature. The jetting of the steam into the absorbers would give some condensation and the efficiency would be increased if cold water were introduced flowing countercurrent to the steam. Since the absorber is available it may be worth a trial. A jet of sufficient size to effect total condensation, with air to assist in the cooling, would be too large for practical purposes.

Probably the largest use of jet condensers is that in connection with steam turbine installations but these require a large quantity of good water. Details concerning jet condensers may be found in "Steam, Air and Gas Power," by Severns and Degler (John Wiley & Sons). These authors state on page 309, "Jet condensers may be classified as low-level jet and barometric condensers. Both types are similar in the manner in which the exhaust steam and cooling water are brought together, but differ in the method of removing the water and the condensate. In the low-level jet condenser the condensing chamber is at a low elevation, water being removed by a pump, and the overall height of that unit is low enough so that the condenser may be directly underneath the turbine or engine. With the barometric type, the condenser is placed at a sufficiently high level (about 40 feet) above the point of water discharge to enable the water to drain away by gravity through a water-sealed 'tail pipe' or barometric column." Also on page 319, "In jet condensers the water and condensate are discharged as a mixture and therefore have the same average discharge temperature. Neglecting the effect of radiation, leakage and the entrained air, the heat given up by the steam is equal to the heat received by the cooling water.

$$W_s(H-(t_2-32)) = W_w(t_2-t_1) \text{ or}$$

$$W_w = \frac{W_s(H-(t_2-32))}{t_2-t_1}$$

in which

W_w = weight cooling water required, lb./hr.

W_s = weight steam condensed, lb./hr.

H = total heat of the exhaust steam, B.t.u./lb.

t_2 = final temp. mixed. cooling water and condensate, °F.

t_1 = initial temp. cooling water, °F.

Low-level jet and barometric condensers are in use for producing the low pressures required for vacuum distillation units.

SMALL REFINING PLANT

I am building a small still for the manufacture of gasoline from 39-degree gravity sweet crude. My design will give me about 25 gallons per barrel of crude. Can you tell me where to obtain information regarding the building and design of small and simple refining plants?—W. D. T.

The same principles have to be considered when designing a small still as for the large ones, with the difference that the greater the capacity of the unit the lower will be the first cost per barrel, also the operating cost per barrel. If a very small plant is to be built the type will have to be confined to the batch system, but if 500 or more barrels are to be handled per day it would be well to consider the continuous pipe still. A complete continuous unit could be designed to flash, reduce and crack in the one pass.

However, the important consideration is that of expense. It is not possible, except under peculiar and exceptional circumstances, to refine petroleum on a small scale and produce a high-grade product that can be marketed at a profit under existing conditions. The mere separation of raw gasoline from a crude oil is a comparatively simple matter, but the market demands a product free from objectional substances and uniform as to volatility.

Water supply, steam generation and treating plant are additional very important factors to be considered.

Details of small stills are given in Day's Handbook of the Petroleum Industry, Vol. 2, page 140. Additional information concerning the design of refineries may be found in this publication.

OUTAGE HORIZONTAL CYLINDRICAL TANKS

Could you give information as to where we can find an ullage table with which we can figure the outage of horizontal cylindrical tanks having diameters from 50 to 100 inches? The ullages desired would be in quarter inches up to 50 inches.—W. H.

The capacities of tanks, or the volumes at any given depth are commonly obtained from the tank strappings prepared by the manufacturer of the tanks. If for any reason these are not obtainable it is necessary to prepare the tables from actual measurements. There are tables available in the literature but these are not reliable except as approximations; if accurate information is desired individual tables should be made. There is a discussion of tank capacities, together with tables, in:

H. P. Westcott, "Handbook of Casinghead Gasoline," third edition.

G. A. Burrell, "The Recovery of Gasoline from Natural Gas."

The following constants are of value when determining tank capacities:

U.S. gallon = 231 cubic inches.

Diameter (inches) squared × 0.0034 = U.S. gal./inch.

Circumference (feet) squared ÷ 20.1586 = U.S. gal./inch.

Circumference (feet) squared × 0.04960677 = U.S. gal./inch.

Circumference of a circle = D × 3.14159.

Diameter of a circle = C × 0.3183.

Area of a circle = D^2 × 0.7854.

When making a tank table the internal circumference should be used. This may be obtained by deducting 0.033 from the external circumference in feet for each one-sixteenth of an inch thickness of the shell.

The measurement of tank volumes is discussed by J. S. Parker in the Journal of the Institution of Petroleum Technologists, Vol. 16, 565, (June), 1930. Under small storage tanks this author states: "These tanks are generally calibrated by the strapping method. Other methods are: (1) To weigh the tank full and empty; and (2) to fill the tank from a container which can be weighed full and empty or which can be very accurately measured. Horizontal cylindrical tanks are more troublesome as they must have their volume calculated for each unit of depth, i.e., a figure cannot be averaged over the tank. For a straight-ended horizontal tank a rapid and accurate method is to draw the average strapping diameter to scale on squared paper, using a square or a multiple of a square to represent unit depth. By totaling the squares and part of squares bounded by each unit of depth the square area is obtained, and from this the volume can be readily calculated.

"The dished-end horizontal tank is the most difficult to calibrate. The sectioning on squared paper method may be adopted for calibrating the actual cylinder. . . . In practice the dished end is assumed to be a spherical segment, and its total volume is worked out according to spherical segment formula. This total volume is then proportioned to units of depth in the tank cylinder section."

The filling method from an accurately measured or weighed quantity of water is considered the most accurate means for determining tank capacities. The same author as quoted above observes: "Ullage. A definite measure on the tape which is greater than the distance from the top of the tank to the oil level is held at a definite point on the manhole and the tape is let down into the tank. The tape is withdrawn and shows the top of the oil mark. This reading subtracted from the measure where the tape was held is the ullage."

FUEL OIL STRATIFYING IN TANKS

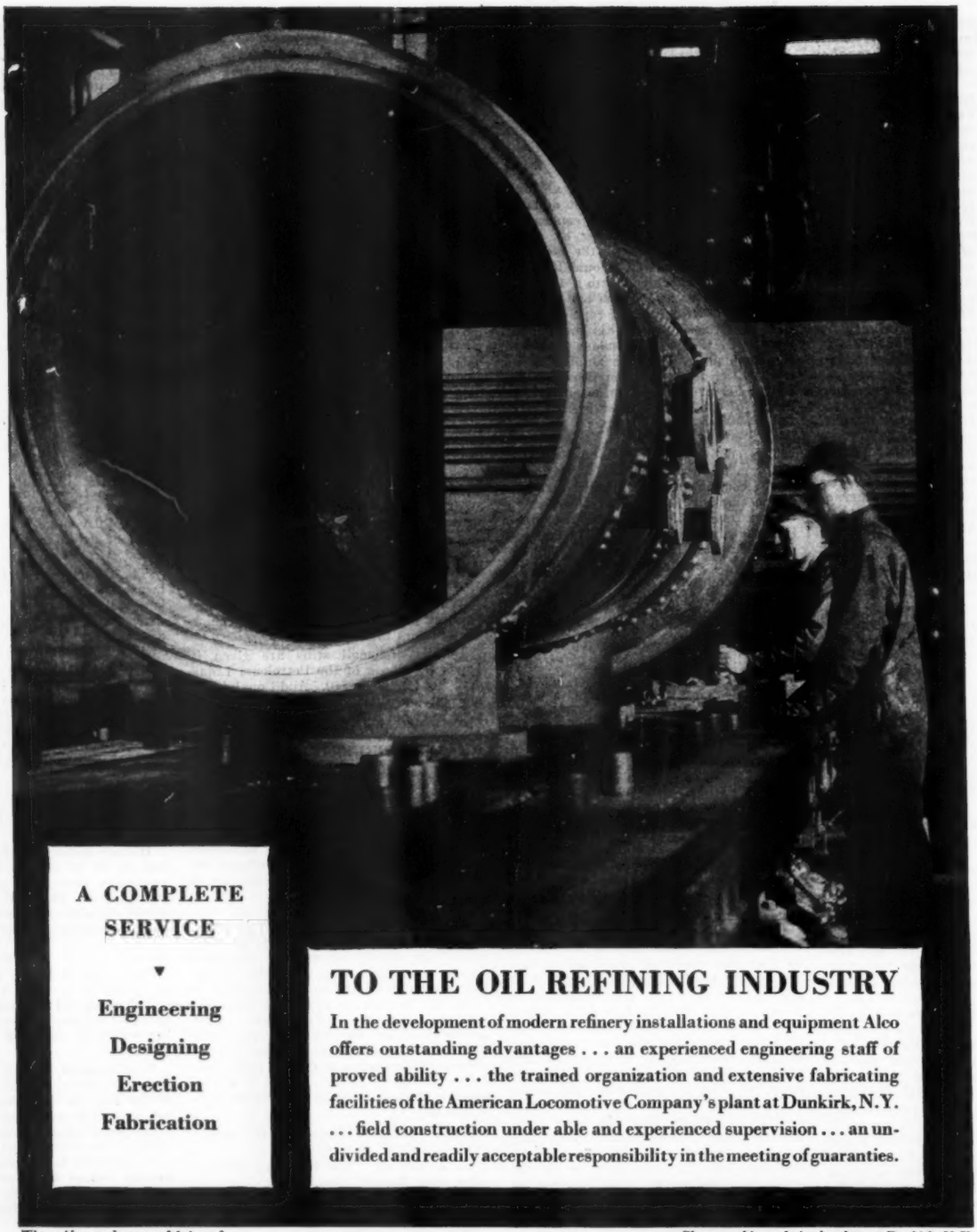
We are having trouble with our heavy fuel oil of 18 gravity stratifying in our customers' tanks. Do you know of some chemical or whatever it may be, that would dissolve this heavy substance so that the burners could use it up.—W. L. Y.

There should be no real stratification of an oil if it is of a uniform quality and there should be no sediment deposited provided an ample specification eliminating solids is enforced by adequate inspection.

Stratification of fuel oil may be corrected by thorough mixing. A stirring device may be installed in small tanks but as this is not practical for the large tanks, circulation through a pump is frequently the only means for keeping any solid material in suspension. The oil is usually heated by means of steam coils while it is being circulated. Some small tanks are so located that heated air may be used for agitating the oil. This should not be done except under safe conditions and then only under the supervision of an expert who is fully acquainted with the explosion hazards to be considered.

The solid material in fuel oil may be carbon for which there is no solvent. Occasionally a fuel oil is found containing sand and dirt introduced through careless handling of the oil. Should the heavy substance be tar or very heavy fuel oil, some improvement may be accomplished by blending with a lighter oil. This would have to be done with the aid of some heat and agitation.

Heavy or solid material should be eliminated from consideration by the adoption of suitable specifications when purchasing the fuel oil.



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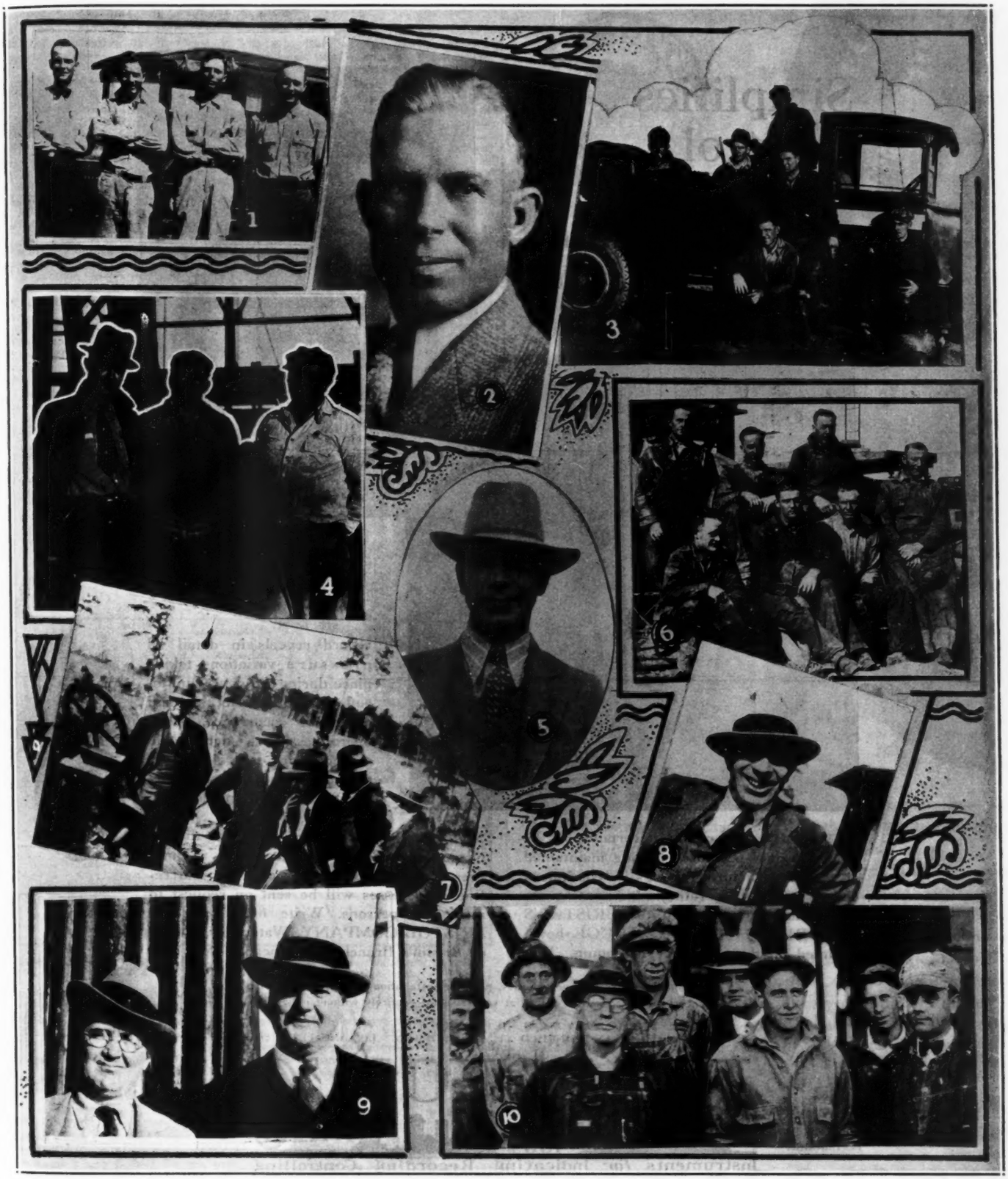
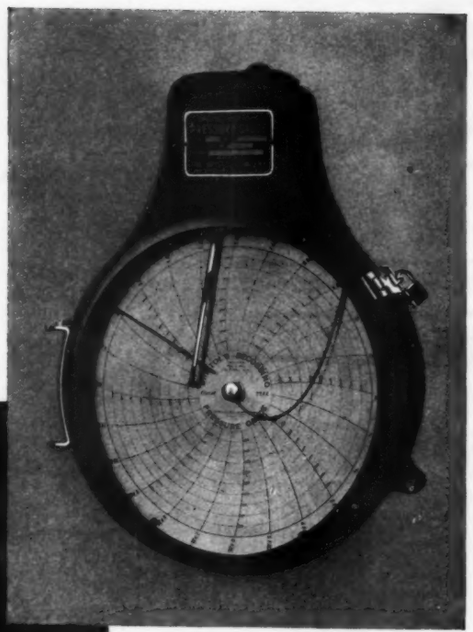


1—A. W. Eberly, E. O. Worsham, J. J. Taylor and J. T. Welch, leak hunters, eastern division, Lone Star Gas Company. 2—Robert Phillips, representative Seminole, Okla., area, Wico Electric Company. 3—Rear: W. B. Horne. Standing, left to right: E. L. Lockett, I. A. Miller and T. J. McDonnell. Front: J. W. Schroyer. Seated in front: L. H. Hudkins, tubing crew, Southern States Company, Oklahoma City Field, Oklahoma. 4—Ed J. Klopfenstein, petroleum engineer; J. E. Fitzpatrick and J. M. Drumm, cleanout men; Indian Territory Illuminating Oil Company, at the No. 4 E. Thume well, Oklahoma City Field, Oklahoma. 5—F. Barnickol, representative, Indianapolis Drop Forging Company, Tulsa. 6—Otis tubing crew on Group No. 1 Oil Corporation's No. 3-B University well, Big Lake Field, Texas. Back row, left to right: W. G. Slapper, M. T. Pierce and J. E. Bethune. Front row, left to right: R. L. Donnell, W. M. Leadbetter, H. H. Dean and R. E. McKinney. 7—Left to right: Al Guiberson, Harry F. Sinclair, W. A. Moncrief, Charles Roeser and Mr. Farrell (who developed block and well) on floor of Gregg County, Texas, discovery well. 8—R. O. Lowrence, land department, Sinclair Oil & Gas Company, Fort Worth, Tex. 9—P. G. Lake and H. L. Hunt, H. L. Hunt, Inc., Shreveport, La. 10—Front row, left to right: C. A. Sadler, driller; M. R. Reddick, superintendent, Gulf Production Company, Hankamer, Liberty County, Texas; M. L. Cashion, chief electrician, Gulf Production Company, Houston, Tex. Back row, left to right: L. K. Kern, G. C. Moore and Myron Allen, helpers, Gulf Production Company, Hankamer; Roger Smith, Gray Tool Company, Houston, Tex.; and T. M. Barrett, helper, Hankamer.

Simplifies Control of *Drilling Mud Pressure*



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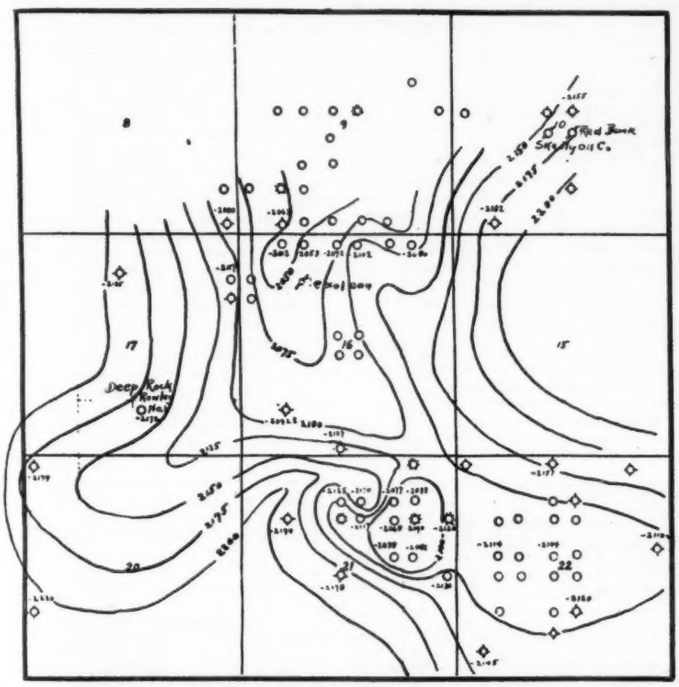
HEAVY OIL IN CREEK COUNTY, OKLA., PRESENTS INTERESTING PROBLEMS

By L. G. E. Bignell
Petroleum Engineering Editor

Dutcher production in northeastern Oklahoma has always been recognized as spotted and liable to vary in amount over a wide range from well to well because it has usually been found in lenticular sand bodies. This formation has been rather limited in area and wells have varied in capacity from a few barrels per day up to as high as 15,000 bbls. for some of the wells in the "Poor Farm" Pool near Bristow, Okla.

The gravity of the oil has always been within the ranges of 29° to 34° Be. and it is therefore interesting to note that on November 6, 1930, the Deep Rock Oil Corp., the Reiter-Foster Oil Corp., the Peerless Oil Producing Co. and E. L. Jillson drilled a well into the Dutcher sand in their No. 1 Rowley, NW SW SE, Section 17-16n-8e, that has a gravity of 18.3° Be.

This oil was found in the Dutcher sand at 3,300 feet and when the cable tools, used in drilling the well, broke into the pay formation they were blown back up the hole about 35 feet and stuck.



Subsurface structure in Township 16n, Range 8e, Creek County, Oklahoma, in 50-foot contours on base of Bartlesville sand. Datum—mean sea level.

When they were removed the oil immediately rose in the hole to 2,200 feet and swabbing at the rate of 90 bbls. per hour for eight hours did not lower this fluid level.

The analysis of the oil is:

Asphalt	90.00%
Gasoline	6.00%
Kerosene	3.00%
B. S. and H_2O (trace)	.02%
Sulphur (trace)	.08%

The oil seems to be well suited for use as road oil because of its high asphaltic content and it may be sold for this purpose this spring. Because of the fact that all storage at the well has been filled for several months and the well not produced, it will be interesting to note what effect producing the well will have upon the oil and whether water will break through quickly.

Four Other Similar Wells

In the Bristow area fairly close to this low gravity oil well there are four other wells that have produced low gravity oil. They are the Skelly Oil Co., Red Bank Oil Co. and the Texolean Oil Co., all with wells in the same township as the No. 1 Rowley of the Deep Rock Oil Corp. and others. Another low gravity oil well was drilled by the Gypsy Oil Co. near Depew, Okla., and known as its No. 2 Willy Wildcat.

The Skelly Oil Co.'s No. 1 S. Bruner in the NE SW Section 10-16n-8e was completed March 15, 1923, and had an initial production of 80 bbls. per 24 hours by swabbing on the first day, and made about 600 bbls. the second 24-hour period.

The oil had a gravity of 19° Be. and in May 15, 1930, the well was making 42 per cent b.s. and water. This mixture cost about $1 per barrel to treat and as the selling price of the oil was only 65 cents per barrel it was decided to plug back from 3,314 to 3,220 feet and this repair reduced the b.s. and water contents to about 24 per cent. The well was finally shut down September 30, 1930.

During the life of this well it made a gross production of about 127,732 bbls. of oil, practically all of which was sold by mixing it with higher gravity oils.

The east offset of the Skelly Oil Co.'s well was drilled by the Red Bank Oil Co. in NW NW SE, Section 10-16-8, and found the top of the Dutcher at 3,259-3,278 feet and the oil produced was of 21 gravity. It is reported that the pay sand in this well was from 3,259 and 3,264 feet and no increase in production was obtained by drilling the hole on to 3,278 feet, nor was any water encountered. The initial production was about 400 bbls. per day and the well flowed for a year. By mixing this oil with higher gravity oil it was possible to make oil suitable for pipe line runs.

The north and northwest offsets of this well were dry but it is reported that the north offset had a showing of oil in the Dutcher, while the northwest offset had no Dutcher sand and was completed as a dry hole in the Wilcox.

The Texolean well in the SW NE NW, Section 16-16-8, found the Dutcher sand at 3,114 feet and drilled into it to 3,122 feet. The hole filled up with a heavy black oil about 2,000 feet, but it was eventually drilled down to the Wilcox

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where it had a showing of oil and was abandoned in the fall of 1922.

No. 2 Willy Wildcat of the Gypsy Oil Co., in SW SE SE, Section 8-15-8, in the Depew Field had some 17 gravity oil in the Dutcher sand but it was deepened to the Wilcox where good production of high gravity oil was found. This particular location is peculiar in that another well drilled two locations east of it found 250 bbls. of 34 gravity oil and about 4,000,000 feet of gas in the Dutcher formation.

To the south of No. 2 Willy Wildcat in NE SW SE, Section 17-15-8, another well produced 527 bbls. of 40.3 gravity oil from the Dutcher formation.

Dutcher Oil Varies in Gravity

The above will indicate that Dutcher oil in the Bristow area varies in gravity over a very wide range. In the SE of Section 5-15-8 this type of oil ranges from 26 to 28 gravity; in the SW of Section 4-15-8 and the NW of Range 9 the gravity is 41°. In Section 21 and 22 in Township 16-8 the gravity of Dutcher oil ranges from 31° to 33°.

This variation in the gravity of Dutcher oil leads to speculation as to why this has occurred and Charles G. Carlson, geologist for the Peerless Oil & Gas Co., Tulsa, in an article in the February issue of the A.A.P.G. bulletin gives the following explanation:

"A heavy asphaltic oil found in this area indicates conditions that permitted oxidation of the oil and the escape of the lighter constituents. Two possible explanations for the localization of the heavy oil in this area are suggested.

"1. The action of underground waters on the oil, such ground waters being related to the old Cushing land area at the west.

"2. A break in deposition permitting erosion of the Dutcher sand which may have extended west farther than well data now indicate.

"Part of the Cushing ridge remained a land area until Bartlesville time because, on the Dropright Dome in the northwest part of Township 18n, Range 7e, Bartlesville sand rests on Arbuckle and other Ordovician rocks. It is known that ground waters have a marked effect on gravity of oil. This is especially true where the sulphate content is being renewed by waters circulating from the outcrop."

It will be interesting to watch the development of this well and note the relative position of the water to this mass of low-grade oil. The oil should find a ready market for road work in Oklahoma as it is understood a similar type oil was imported for this purpose from Mexico last year and as the well is produced it is possible that some answer to this peculiar condition of oil deposits will be given.

Acknowledgement is made to Paul S. Reed for much of the data given above and for the sketch map of this area.

CENTRAL WEST FIELDS

(Continued from Page 58)

and 300 feet from the east line of the property.

KENTUCKY

Only eight completions were reported from all parts of Kentucky, one being in the eastern part, the others in the western division. In the eastern division, District 18, Lee-Owsley County, James G. Cooper's No. 5 Robert Day farm, produced but 2 bbls. under pump.

An interesting test was the completion of a 15-bbl. producer in the second venture by Christian & Schmitt on the Edward Walker farm, 2 miles north of Sebree, in Webster County. This showing may encourage further test work in that area as soon as conditions improve.

The outstanding well of the week in the Tri-County Field was the Chester Oil Co.'s No. 4, in the northwest corner of the Will Bates farm, in Hancock County, which showed an initial of 100 bbls. Hupp, Duff and others' No. 2, on the Claud Bolling farm, same county, was dry in the Jett sand and is being drilled to the Barlow sand in hopes of finding commercial oil or gas.

Another well of much interest is that of the Allied Oil Corp. and others, on an unknown farm a short distance from the town of Island, in McLean County. This venture is reported showing around 30 bbls. initial. The actual production will hardly be known until connection is made to the pipe line which is approximately 6 miles away. The slow development in that area of the county means it may be a long time before the pipe line is connected to the new producer, as no extensions are being pushed at this time.

In the Barrett Hill area of McLean County, the Ohio Oil Co.'s No. 4 G. B. and R. L. McManama farm, is a dry hole, and Ballantine, Bryan and others have one in No. 1 Gilford Caroway farm, at a depth of 1,238 feet.

Muhlenburg County has a nice producer in Ellis & Young's No. 2 Hugh Lee farm, near Weir, southwest of Greenville, with an initial of 35 bbls. from a depth of 800 feet, being a shallow well for that county, which has secured its production in the past from the McCloskey sand.

In Metcalf County, southwest of the Lagrande Field, unknown parties found a nice well on the A. T. Lowe farm.

Standard Exploration Syndicate is reported drilling No. 3 on the J. M. McNeely farm, on the Farmersville Dome, 6 miles north of Princeton, in Caldwell County. This area looks like an inviting field for development work when improvement is shown in the industry.

Unknown parties are reported drilling on the Howard farm, near St. Lawrence Church, in Daviess County.

DIRECT CURRENT IN OIL WELL DRILLING

(Continued from Page 61)

at a safe distance from the drilling rig, and to oil immerse those control parts that must be located at the rig, and to enclose the motor with covers for forced ventilation. The blower furnishing air to the motors must be located at a safe distance away from the rig where the air is comparatively free from gas.

The full load efficiency of D.C. is lower than A.C. but it is very seldom that any drilling equipment is operated at full load speed. If any A.C. equipment is operating at a point of the controller other than the highest speed point the efficiency is less, the exact value depending upon the characteristics of the load. Higher efficiency may be obtained from direct current drive for all speeds less than full load speeds.

With direct current equipment a circuit may be used which will permit the equipment to exert 200 per cent full load torque in starting and hold this torque for a short interval of several minutes without any chance of damaging the equipment. No overload relays are required and once the load has been picked up only failure of the engine driving the generator can cause the equipment to drop the load. This point is especially valuable in hoisting work or when engaged in handling pipe. The generator voltage characteristics may be so designed that it will be impossible to overload the engines regardless of the manner in which the control is handled and yet a relatively high ratio of delivered horsepower to engine horsepower may be obtained through the greater portion of the hoisting cycle.

Hoisting Cycle

A much more effective hoisting cycle may be obtained with direct current than with alternating current. An idea of what may be obtained with either A.C. or D.C. equipment when operated with a total engine horsepower of 375 horsepower is shown on Curve No. 2. The torque capacity in pounds feet of the alternating current motor is limited by the engine horsepower involved. The line AB representing 1,900 pounds feet torque is the limit of the torque that may be applied to the load by the 125 horsepower standard drilling motor when the power is supplied by engines having a total of 375 horsepower. Whereas under same conditions with a properly designed direct current equipment 2,900 pound feet torque may be applied at starting to the load. At low values of torque the direct current motor will drive the equipment at a higher rate of speed than may be obtained with alternating current equipment. This higher torque at low speed and high speed at low torque which may be obtained with direct current is one of the distinct advantages of direct current drive. It is possible to design an equipment which would apply the full engine horsepower to the load over approximately three-quarters of the operating cycle but such an equipment would be necessarily very large and expensive and we do not believe that the advantage obtained by it over the equipment would be enough to justify the additional expense.

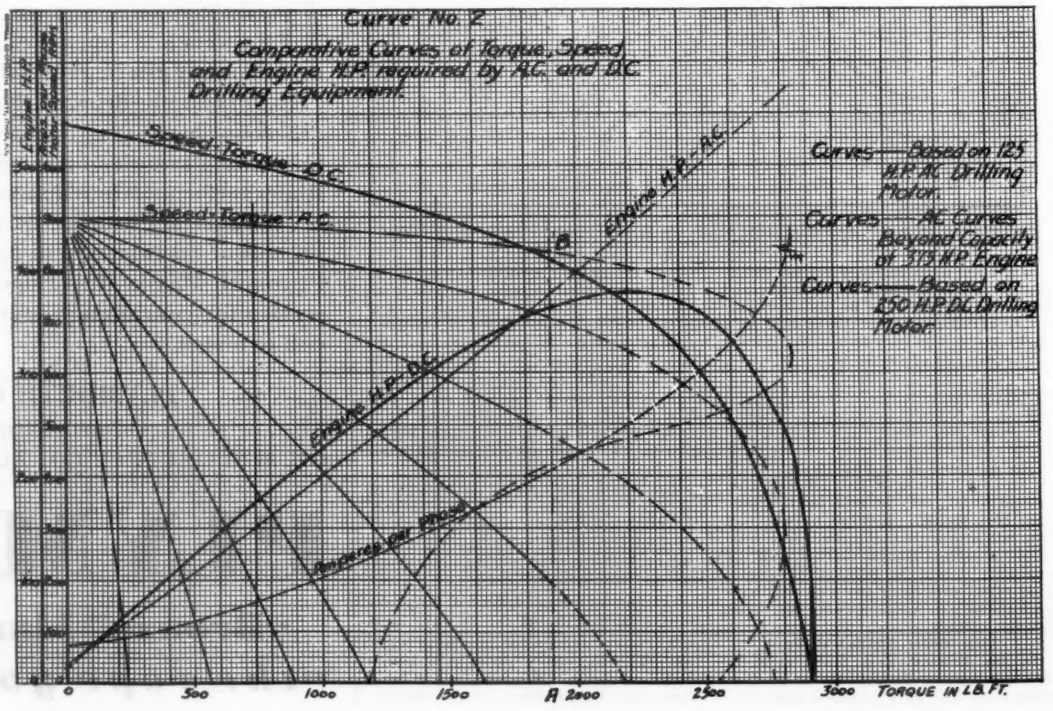
With direct current equipment the engine may be operated at any desired speed up to the normal speed which permits the most economical operation of light loads.

When direct current equipment is operated by the means of a motor generator set where central station power is available, an equivalent hoisting cycle may be obtained with direct current with about 70 per cent of KW. demand required by the A.C. equipment. This results in a lower demand charge with a resulting lower earned rate per KWH. and lower total power cost. Without question, central stations will appreciate the value of the lower demand required by the D. C. equipment as the poor load factor of A.C. equipment has made the drilling load undesirable to them in the past.

In general we believe that for drilling equipment where the power is supplied by internal combustion engines, that direct current equipment represents the best method of power transmission between the engine and the driven load, and that the use of such equipment will meet with great favor in the industry.

PROPOSE BILL TO CHANGE METHOD COLLECTING TAX

LOS ANGELES, Calif., Mar. 30.—Major companies and independent operators reached an accord on the main details of proposed legislation which includes appointment by Governor Rolph of an impartial commission of three members. One commissioner will be recommended by major companies and one by the independent group, the third member will be the director of oil and gas who will be ex officio chairman. It is proposed to drop all pending regulatory legislation except two bills, these are Senator Sharkeys bill and another measure providing for collection of gasoline taxes monthly and prescribing certain methods to be followed so as to safeguard interests of the State. The latter bill which makes it obligatory for refiners to post a high cash bond to protect the State will be amended so that smaller marketers instead of being obliged to post a bond will be allowed to pay gasoline taxes to a bank each day and the depositary or trustee will, at the end of each calendar month, forward all moneys collected to the proper office at Sacramento. The tentative agreement regarding pending legislation will be discussed in detail at a general meeting to be held this week at the State Capitol so that no delay will be experienced when it is brought before the general assembly. The so-called 100-foot bill introduced to prevent future town lot drilling will be killed in the committee and a same fate is in store for the bill which contemplates increasing the state gasoline tax.



EFFECT OF VACUUM ON OIL WELLS DISCUSSED AT FIELD MEN'S MEETING

By George G. Moore
Root Refining Co.*

Vacuum is one of the first and oldest methods tried to increase production from oil wells. From the very beginning there has been a great difference of opinion as to whether or not the application of vacuum was beneficial in increasing the immediate production of oil. It has also been assumed, both by proponents and opponents of the use of vacuum, that the imposition of vacuum on one property requires the operators of all the surrounding properties also to apply vacuum.

In some cases one operator may often arbitrarily control the operations of many others and determine the production methods of an entire area. This situation is unfair and a number of states have enacted legislation, creating commissions whose officers are empowered to formulate and enforce rules and regulations that will govern these situations. Such states, close by, are Oklahoma and Texas. Before vacuum can be applied upon an oil sand, application for such procedure must be filed with the corresponding commission of that state and a public hearing held.

Vacuum is applied to oil wells in which the gas pressure has been nearly exhausted, by connecting the casinghead gas line to the suction line of a vacuum pump. The discharge from the pump is usually connected to a distributing system for use over the lease or to some casinghead gasoline plant, where the gasoline is extracted and dry gas is returned for lease use.

The amount of vacuum that can be held on the wells, of course, is determined by the size of the pumps and the amount of gas the wells produce.

If the vacuum pump is of such capacity that it will remove the gas in the well from between the casing and the tubing more rapidly than the gas enters, the gas will become rarified within the well chamber, and if the sand has large enough pore space the gas within the sand body will become rarified. Such a condition becomes quite pronounced in certain oil pools and it is not unusual to create subatmospheric pressure in the sand throughout the entire distance between wells. This condition is present in the El Dorado South Field and in some parts of Smackover Field.

However, I do not think this condition would exist if the fluid level in the well was held at or above the top of the oil sand. By holding the fluid level above the sand the differential pressure that tends to force the oil from the sand into the well is increased by vacuum just as positively as when the sand is exposed. And there is less chance of the gas channeling. Also, there is less tendency to paraffin and clog up the pores of the sand around the walls of the well and less sand trouble will result. Of course, if the offset leases are exposing the sand you are compelled to do likewise.

The texture and porosity of the oil sand probably has a more important bearing upon increasing production than anything else. A coarse sand with large interstices affords a better condition for the successful application of vacuum. The Nacatoch sand in this section of the country is of a texture and porosity favorable to the application of vacuum. However, the Nacatoch sand if of an unconsolidated nature and when vacuum is first applied will give a great deal of trouble in heaving and sanding up the wells, thus causing the expense of numerous clean-out jobs.

The physical characteristics of the oil are also to be considered. An oil of high gravity is usually, although not always, less viscous than oil of low gravity. Oil of low viscosity is more suitable to the application of vacuum than oil of high viscosity, as the passage of the low viscosity oil through sand is more sensitive to slight changes in the differential pressure that causes oil to flow. As these flowing differentials may be controlled within certain limits, by the degree of vacuum applied at the casinghead, it follows that when vacuum is applied to a sand carrying high gravity oil its effect is more pronounced than when it is applied to heavy oil. One of the main reasons for this is that oils of high gravity usually produce more gas and vapors than heavy oils, when vacuum is applied. It is generally accepted that gas is the principal propelling medium that causes oil to move through the sand and toward the well. It does not follow, however, that the increase of oil production is necessarily in proportion to the increase in gas production. Quite often it is the case where vacuum is applied, that the gas increase will be enormous without any increase in oil production.

Sudden changes are to be avoided; for instance, a sudden decrease of vacuum will have the effect on the flow of oil through the sand likened to the effect of reducing the motion of a heavy load over a soft road. The load must be kept in continuous motion, otherwise it will settle down and require a considerable increase in power to start it again. Observation and experience indicate that the oil in the sand likewise must be kept in continuous motion. Otherwise, excessive energy must be expended to overcome lost inertia and loss in production will follow.

Another thing that must be avoided is letting air enter the vacuum line and extreme care should be taken to stop all leaks and especially to close off the vacuum lines in the casinghead when pulling wells. In fields where the oil sand is being operated at subatmospheric pressure a tubing stripper should be used so that air will not pass through the casing in pulling.

*Paper read before the El Dorado, Ark., chapter of American Petroleum Institute.

CUT OILS YIELD TO CHEMICAL TREATMENT

(Continued from Page 76)

tained than by introducing at points nearer the trap.

After the chemical has been thoroughly mixed with the oil by passing through the flow lines and agitation in the separator, the balance of the treating is left to a well designed treating plant.

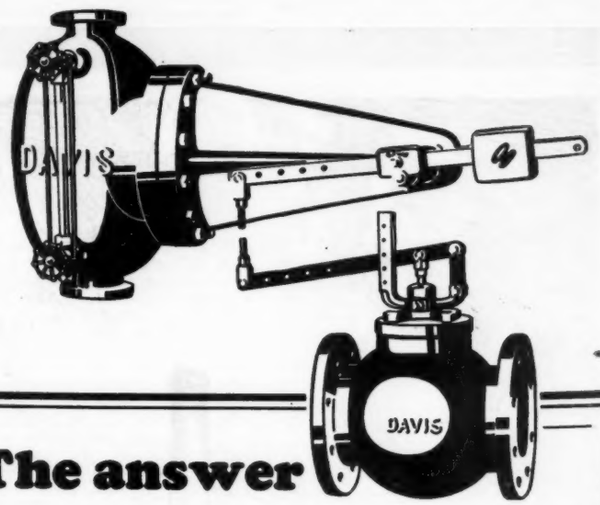
There are many types of plants in use throughout this district being operated with varying degrees of efficiency. Due to the fact that the water encountered in this section is fresh and only slightly heavier than the oil it is necessary that the oil have a long settling time, free from any agitation in order to allow the finer particles of water to drop out. This settling time is obtained by designing a treating plant with gun barrel and settling tank as large as possible, considering present production and future production that might be obtained. By equipping tanks with flumes or boots of large diameter, agitation can be reduced to a minimum, thereby speeding the settling action.

In a number of instances excelsior tanks, more commonly called "hay tank," are being used to separate fine particles of water from oil which otherwise would not settle without increasing the amount of chemical or the application of heat.

Generally speaking, heat is not being used in this district and where used only mild temperatures are necessary. High temperatures should be avoided as much as possible due to gravity and volumetric losses.

Treating oil by agitation with gas in stock tanks is used with some degree of success, providing the gas used is under sufficient pressure to thoroughly mix the chemical throughout the oil.

Most of the major companies have well organized treating departments with competent engineers or treating men in charge and experience has shown that reduced treating costs and more efficient treating methods have justified these departments.



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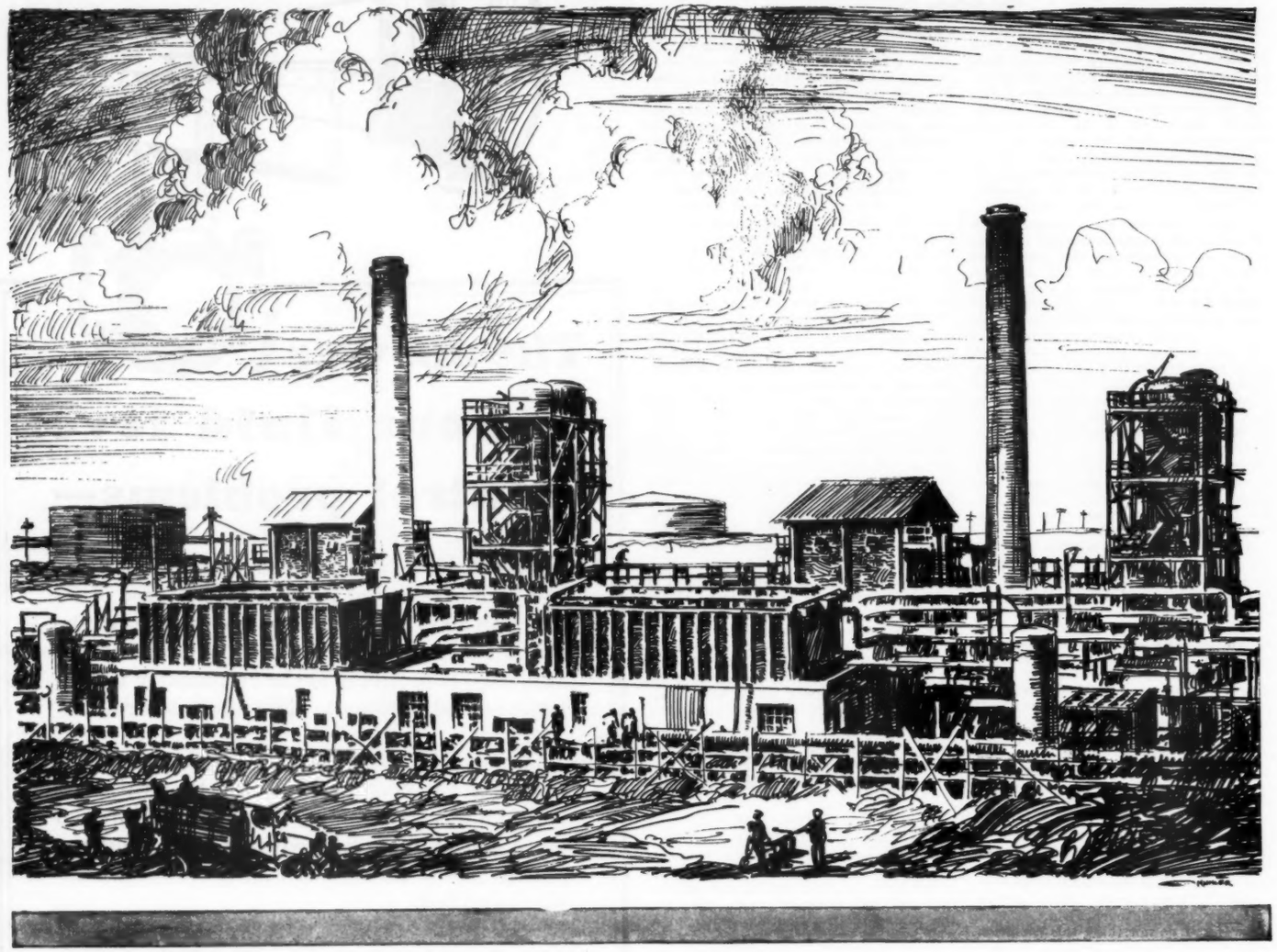

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CANADIAN FIELDS

(Continued from Page 43)

2, Section 17-11-22w4, had to be cemented back more than 400 feet from 3,485 feet owing to caving trouble.

In the Castor district, East Central Alberta, Hudson's Bay's No. 1 Paintearth, LSD 5, Section 27-39-15w4, recently resumed drilling after cementing 8⅝-inch casing at 3,628 feet, and is unofficially reported to have struck a heavy flow of salt water just below the cement, which will necessitate a second cementing job.

Red Coulee Field

On the Alberta end of the Red Coulee structure, Vanalta Oils' No. 4, Section 4-1-16w4, is reported drilling close to the sand. Seattle-Portland Syndicate's No. 1, LSD 10, Section 1-1-15w4, is reported working on cellar. To the northwest, Dalco Oil & Gas Co.'s No. 2, LSD 7, Section 19-2-17w4, is cementing casing at 2,310 feet.

Drilling in the Foothills

On the Waite Valley structure, west of Turner Valley, Calgary Development & Production Corp.'s No. 1, LSD 10, Section 21-19-3w5, is drilling at 4,840 feet, 1,006 feet below the top of the lime, with a small gas flow.

On the Moose Dome, Moose Oils' No. 1, LSD 16, Section 29-22-6w5, is cleaning out after pounding up a lost bailer, and will resume drilling from 2,835 feet. The test has some gas in both the Madison and Devonian.

On the Monarch structure, Majestic-Cartier Oils' No. 1, LSD 3, Section 36-31-7w5, is reported resuming work.

Watson Structure

The area in the southern foothills generally known as the Watson structure is likely to have at least one test this season. This structure extends through Townships 9, 10 and 11, Range 2w5. It is a portion of the foothill belt which extends from the international boundary to the Mackenzie in the far north, and of which Turner Valley is a part.

Fred A. Brandt and associates of Toronto are reported planning to drill for oil and gas in a new section of East Central Alberta.

Ribstone Field

In the Ribstone Field, eastern Alberta, Algonquin Petroleums' No. 1, LSD 1, Section 20-45-1w4, is pulling casing. Drilling equipment is being moved to Algonquin's No. 2 location in LSD 5, Section 16-45-1w4. No. 1 is reported to have been carried to 2,305 feet after failing to get crude oil production at 1,950 feet; and to have encountered conditions which indicated a fault. Rayco Oils, Ltd., which has No. 1 rigged in LSD 3, Section 4-47-1w4, is reported planning to drill No. 2 in another section.

Cardium Oils, Ltd., has completed its organization and has located its No. 1 test in Section 16-45-1w4, on acreage subleased from Ribstone Oils, Ltd. Ray Cook will probably handle the drilling. Officers are: President, F. E. Spooner; vice president, J. T. Atkinson; secretary, A. D. McLean; treasurer, W. G. McMaken; directors, F. J. S. Sur, R. W. Ward, R. T. Pendray and E. E. Hagel.

Ontario Drilling

In Norfolk County, Ontario, Acme Gas & Oil Co.'s No. 2, Heemer farm, 710 feet northwest of No. 1 producer, is reported to have got the sand at around 1,210 feet, with an initial gas flow of 260,000 feet.

On the Six Nations Indian Reserve in Brant County, near Brantford, Petrol Oil & Gas Co. of Toronto is continuing shallow operations for gas. To date, 42 wells have been drilled, only 6 of which have proved noncommercial. The Ajax company has drilled a total of 14 wells on its acreage. The 4-inch line from the reserve to Brantford has been increased to 6-inch and additional wells connected.

In northwestern Kent County, north of the Dover Field, the Black Bear Syndicate of Detroit has opened an office at Wallaceburg, Ontario, from which its operations will be directed. George Drake and Col. A. C. Waters of Detroit are in charge. It is understood a test will be started next month on the north branch of the Sydenham River at the junction of Black and Bear Creeks, and it is planned to drill to the producing horizon in the Trenton limestone, with a maximum depth anticipated of around 4,000 feet. This will be the first Trenton drilling undertaken in southwestern Ontario in some years.

Manitoba Prospect

A new oil prospect is reported in Manitoba close to Winnipeg. It is reported that Winnipeg interests are planning to drill for oil at the town of St. Boniface, adjacent to Winnipeg.

MICHIGAN FIELDS

(Continued from Page 48)

Old Dutch Oil & Gas Co.) brought in No. 1 Michael McGuire, NW SW, Section 36-16n-4w, Vernon Township, Isabella County, in the Mount Pleasant area. Marshall gas was topped at 1,297 feet and at a total depth of 1,305 feet it was good for 2,700,000 feet. It is the fourth gasser in the vicinity of Clare.

The only other completion in the Mount Pleasant area was the Wolverine Natural Gas Co.'s No. 1 Lars P. Anderson, NW SW NE, Section 16-9n-1w, Elba Township, Gratiot County, plugged and abandoned at 525 feet.

The Pure Oil Co. has been testing two wells in Section 1 of Chippewa Township, and Section 8, of Greendale Township, respectively, for possible commercial production in the upper Traverse. Both wells are estimated good for about 60 bbls. in the Traverse although they may not be completed at this depth.

The Pure company's No. 3-"B" Iosco Land Co., SE SW, Section 1-14n-3w, Chippewa Township, Isabella County, struck pay sands of the Traverse at 3,038 feet while the Pure Oil Co.'s No. 4 Fred B. Sias well had upper Traverse pay at slightly below 3,000 feet and swabbed between 50 and 60 bbls. It is being drilled to the Dundee while the No. 3 Iosco will be given a longer test.

About 12 wells are active in the entire Mount Pleasant area including the proved field of Chippewa Township, Isabella County, Greendale Township, Midland County, Vernon, Broomfield, Deerfield and Denver Townships, also Isabella County, and Clare County.

McKay & Mercier's No. 6 James A. McKay, NE NE, Section 1-17n-5w, Surrey Township, Clare County, is drilling in the Dundee at 3,852 feet and is expected to be completed this week.

New Permits

Wells have been started on two new locations: H. C. Nelson's No. 1 Arvid Nelson, SE NW, Section 24-12n-18w, White River Township, Muskegon County, and Pure Oil Co.'s No. 1 Alvin Anthony, NE SW, Section 17-14-2w, Greendale Township, Midland County.

The new Nelson well is in a territory which is receiving considerable play just now as the possible place for opening a new pool near Muskegon.

Nelson's No. 1 George T. Rose, SE NE NE, Section 25-12n-18w, White River Township, recently was drilled to the red rock and shut down as a structure test.

Henry Carpenter, Muskegon contractor, has deepened the former White River Oil Corp.'s No. 5 on the William Lipka, N half NE SE, Section 19-12n-17w, Montague Township, to 2,080 feet where it struck the Dundee. It will be drilled to about 2,100 feet.

H. and W. Feicke's No. 1 Feicke, SE SW, Section 1-11n-17w, Fruitland Township, is reported to have landed drive pipe and drilled a considerable distance below bed rock. This well is between the Muskegon Field and the White River and Montague Township wells.

Oceana County

Edward DuVall's No. 1 Byron Curtis, NE NE, Section 1-14n-19w, Benona Township, Oceana County, is driving pipe on a fifth wildcat near Silver Lake and Lake Michigan, while No. 1 Vanderwall north of New Era village is to be plugged and abandoned.

Two wildcats in Mid-Michigan which are being watched for possible new developments are C. R. Smith's No. 1 J. Jorgensen, SE NW, Section 21-22n-9w, Haring Township, Wexford County, and Henry Miltner's No. 1 Miller, NW NE NE, Section 24-24n-7w, Pioneer Township, Missaukee County. The latter is drilling at more than 3,000 feet.

OKLAHOMA FIELDS

(Continued from Page 34)

flow gauges of the entire area was 262,093 bbls. and the umpire's estimates were 257,329 bbls., a difference of only 4,764 bbls.

Crosbie and Mid-Kansas Oil & Gas Co.'s No. 1 Miller, SW cor. NE NE, Section 22-6-3, in the Wanette Pool, may indicate the northwest limits of the producing area has been defined. The well swabbed 115 bbls. of oil and 55 bbls. of water in 24 hours from the sand at 3,573-88 feet.

Carter County

In Carter County, Amos Drilling Co.'s No. 2 Hooks, SW cor. SE SE Section 13-1s-2w, has drilled the plugs and was landing a liner. The test is located on the northeast edge of the field and had a showing of oil in sand at 2,005-2,199 feet. A production test will be made in a few days. The Texas Company's No. 6 Eaves, NE cor. SW SW Section 24-1s-3w, is shut down waiting for cement to set at a total depth of 2,372 feet, on top of an oil sand. The test is in the south portion of the field. Carter Oil Co.'s No. 1 Robb, NW cor. SW NW Section 19-1s-2w, has cemented casing on top of an oil showing found at 1,741-1,856 feet. The test is on the east side and the total depth is 1,896 feet. Magnolia Petroleum Co.'s No. 1 Burton, NW cor. SE NW Section 30-1s-2w, missed the regular producing horizon and was drilling deeper at 2,825 feet. The test is east of production in the field.

Quinton Gasser

Another gas well was added to the Quinton gas field in Pittsburg County during the week. The field has the largest potential gas supply yet found in the eastern part of the State. Central States Power & Light Co.'s No. 2 Carney, NW cor. NE Section 9-7-18, in the Quinton gas field, was completed for 18,000,000 feet from sand found at 1,667-1,820 feet. Same company's No. 2 Colbert, SW cor. Section 9-7-18, was estimated at 3,000,000 feet from sand at 1,735-50 feet. The 6-inch casing was being landed before drilling deeper.

Marshall County, which last summer was the scene of most activity in the shallow areas, has declined to only a few operations. Poor Boy Oil Co.'s No. 3 Null, SW cor. NW Section 24-5s-5, a twin to the same company's No. 1 Null, being only 36 feet northeast, was drilling at 650 feet, and will be carried to the deep pay horizon. No. 1 Null is pumping 18 bbls. from sand at 720-30 feet. Industrial Oil & Gas Co.'s No. 1 Sharp, NE cor. SE NE Section 17-6s-5, a wildcat about 6 miles southwest of the Madill Field, was landing 8-inch casing at 440 feet.

W. H. Smith and others' No. 1 McClarty, SE cor. NW NE, Section 18-4s-8w, a wildcat in western Jefferson County, has resumed drilling operations at 810 feet after being shut down for boiler repairs.

Carter Oil Co.'s No. 1 Florence, NW cor. NE Section 11-3s-6w, a wildcat in Stephens County, was spudding. The test is expected to be drilled to the Wilcox sand.

Greater Seminole Production

The production from the Greater Seminole area for the week ending March 23 averaged 229,041 bbls. a day from 2,863 wells. The production shows an increase of 10,000 bbls. over the previous week's gauge. The first 12 pools listed below comprise the Seminole area which averaged 178,627 bbls. a day from 1,861 wells.

Pool—	Wells	Bbls.
Little River	370	42,792
E. Little River	82	11,434
Carr City	81	14,883
Maud	131	2,284
Mission	90	15,406
Bowlegs	276	25,824
Earlsboro	281	15,315
S. Earlsboro	27	7,062
E. Earlsboro	156	26,980
Seminole	254	10,281
E. Seminole	33	1,575
Searight	80	4,791
Total	1,861	178,627
Allen	278	6,828
Asher	26	681
Wanette	58	3,368
Konawa	110	13,010
Sasakwa	50	4,351
St. Louis	480	17,176
Grand total	2,863	229,041

Greater Seminole Shipments

The pipe line shipments from the Greater Seminole area totaled 207,117 bbls. a day for the week ending March 23. The daily average shipments by companies were as follows:

Company—	Seminole (bbls.)	Asher, St. Louis (bbls.)	Konawa (bbls.)
Barnsdall	2,064	.....	.....
Champlin	3,764	.....	751
Consolidated	.....	2,928	.....
Cosden	6,175	.....	3,066
Deep Rock	2,607	1,808	.....
Empire	6,108	.....	.....
Gulf	24,804	2,678	761
Magnolia	12,273	4,699	924
Oklahoma	25,211	448	116
Prairie	3,015	3,546	632
Prod. & Ref.	3,531	.....	.....
Pure	7,710	.....	.....
Shell	9,226	433	1,132
Standish	1,623	.....	.....
Stanolind	30,038	3,421	3,089
Texas	18,192	1,566	1,597
Tidal	8,133	5,135	.....
Total	164,363	26,662	12,056
Tank cars	3,926	110	.....
Grand total	168,289	26,772	.....

Carter County

Lewis Sikes is building the rig for No. 1 Hopson, NE cor. NW NE, Section 25-1s-3w. Magnolia Petroleum Co.'s No. 1 McCrory, SE cor., Section 10-1s-3w, has been abandoned at 4,241 feet. Tex Okla Drilling Co.'s No. 1 Anderson, SE cor. NE SE, Section 32-4s-2, is dry and abandoned at 2,806 feet.

Cotton County

Colbert & Rob Cole's No. 1 Thomas, Section 28-2s-11w, is a rig.

Creek County

Holmes and others' No. 2 Bruner, SE cor. NW SW, Section 3-19-9, is spudding. Curtis and Tulsa Oil Co.'s No. 1-A Purcell, CSL N half NW NE, Section 22-19-9, is a rig. Trout and others' No. 2 Grayson, SW cor. NW NE, Section 1-19-10, is drilling at 1,920 feet. Magnolia Petroleum Co. has the rig up to deepen No. 4 Boone, SE cor. SW SE, Section 34-17-7. W. H. Whittington and others' No. 1 Charcotetana, NE cor. NW NE, Section 9-17-10, is rigging. Pioneer Petroleum Co.'s No. 15 Bucktrot, SE cor. NE, Section 24-17-10, is drilling at 1,350 feet. L. A. Carpenter and others' No. 1 Thompson, SE cor. NW SW, Section 22-17-11, is a rig. Wilrough Oil Co. has the rig up for No. 1-A Stewart, SW cor. NW NE, Section 32-17-12. Murta and others' No. 4 Wilson, NE cor. SE SW, Section 32-17-12, is spudding. C. Mechling and others' No. 1 Coonrod, SE cor., Section 18-19-9, is dry and abandoned at 2,525 feet. E. L. Robinson's No. 2 Bucker, SW cor. NW SW NW, Section 21-19-9, has been completed for 50 bbls. in sand 2,173-2,214 feet. Gled Oil Co. and others' No. 1 Hamilton, NW cor. NE NE, Section 29-19-9, made 440 bbls. in sand 2,114-56 feet. Krasne Drilling Co.'s No. 2 Harry, SE cor. SW SE, Section 4-17-11, has been completed for 4 bbls. in sand 1,662-91 feet. Murta, Sherry and Carter Oil Co.'s No. 3 Wilson, NW cor. SE NW, Section 32-17-12, gauged 6,500,000 feet of gas from sand 1,585-1,600 feet.

Grady County

Badgett & Cooper's No. 1 Williams, C SW, Section 24-4-8w, has been completed for 39,000,000 feet of gas in sand 1,909-21 feet.

Haskell County

Finefield & Council's No. 1 Townsite, Block 50, Kinta, SE cor. NW NW, Section 6-7-20, is drilling at 220 feet.

Hughes County

Magnolia Petroleum Co.'s No. 2 C. Hayes, NW cor. SW NW, Section 16-7-8, has been completed for 15,000,000 feet of gas in sand 2,995-3,017 feet.

Lincoln County

Mid-Continent Petroleum Corp. and others' No. 1 Lillis, NE cor. SE, Section 9-13-6, is a rig under construction. H. D. Truex and others' No. 1 Wolfe,

NE cor. NW, Section 12-15-6, made 21,000,000 feet of gas from sand 3,647-95 feet.

Muskogee County

H. L. Jolly's No. 2 Spaulding, SE cor. NE, Section 8-15-18, is drilling at 175 feet. Braman Oil Co. moved a machine in for No. 4 J. Jackson, CNL SW NW, Section 17-13-16.

Oklahoma County

Westgate Oil Co. has the cellar dug for No. 3 Carey, Block 23, Lots 7 and 8, Phillips-Meade Addition, SW cor. SE NW SE, Section 34-12-3w, Oklahoma City Field. No. 4 Carey is a cellar, Block 13, Lot 30, Phillips-Meade Addition, SW cor. NW SE, Section 34-12-3w. Denver Producing & Refining Co.'s No. 1 Glendale, NE cor. SW NW, Section 3-11-3w, is a cellar. Stauffer and others made location for No. 1 Weinig, SW cor. NE NW SE, Section 15-11-3w. Block 2, Craig Subdivision of Fruitland Addition. California Operating Co.'s No. 1 Stout, NW cor. SE NW, Section 2-11-3w, has been completed for 6,655 bbls. in Wilcox sand 6,185-6,200 feet, total depth 6,469 feet. Phillips Petroleum Co.'s No. 1 Mosey, SE cor. NE SE NW, Section 3-11-3w, topped Wilcox sand 6,305 feet, had base of sand 6,430 feet, drilled to 6,436 feet and made 5,483 bbls. in four hours on 4-inch choke. No. 1 Robb, C E half SW NE SW, Section 10-11-3w, topped Wilcox sand at 6,465 feet, drilled to 6,548 feet and made 2,550 bbls. in four hours. Indian Territory Illuminating Oil Co. and others' No. 6 Ferndale Community, NW cor. SE NE, Section 11-11-3w, has been completed in Johnson sand 6,225-6,474 feet, total depth 6,501 feet, making 309 bbls. in eight hours.

Okfuskee County

J. L. Selby's No. 5 M. Alexander, CEL NW NE, Section 9-12-11, is dry and abandoned at 2,670 feet.

Okmulgee County

The Texas Company's No. 1 Meyers, CWL SW NE, Section 35-16-11, is rigging up. Iverson and others' No. 1 Rentie, CNL NE SW, Section 14-14-12, is spudding. C. D. Klingensmith's No. 3 Farr, CEL SE NW, Section 35-16-11, has been completed for 45 bbls. in sand 1,806-21 feet.

Payne County

Wood Oil Co.'s No. 1 Curley Chief, SW cor. SE, Section 33-19-5, has been completed for 150 bbls. in 15 hours from sand 2,390-2,414 feet. Deep Rock Oil Corp.'s No. 1 Little Chief, NW cor. NE, Section 4-18-5, has been deepened and completed for 140 bbls. in sand 2,373-97 feet.

Pittsburg County

Central States Light & Power Co.'s No. 1 Carney, NW cor. NE, Section 9-7-18, made 18,000,000 feet of gas in sand 1,667-1,820 feet.

Pottawatomie County

Mid-Continent Petroleum Corp.'s No. 2 Archer, SE cor. SW SE, Section 14-6-3, West Asher Pool, was completed for 1,340 bbls. in sand 3,522-54 feet.

Seminole County

The Prairie Oil & Gas Co. and T. B. Slick's No. 6 Hyde, NW cor. SE NW, Section 2-8-5, Carr City Pool, is moving in.

Wagoner County

Barth and others' No. 1-A F. McIntosh, NW cor. SW SE, Section 22-18-15, has drilled to 300 feet and shut down.

Tulsa County

Galt-Brown Oil Co.'s No. 1-A McKay, SE cor. NW SW, Section 32-19-11, is drilling at 900 feet. Chandler & Day's No. 1-A Shields, SE cor., Section 20-19-14, is drilling at 1,190 feet. Dunn and others' No. 1 Flippen, NE cor. SW SE, Section 28-18-14, is an old well drilling deeper at 1,625 feet. J. H. Wright estate's No. 1-A McKellop, CEL SW, Section 23-17-10, is drilling deeper at 3,000 feet. Murphy and others' No. 1-A McIntosh, NW cor., Section 28-19-14, has been abandoned at 1,335 feet. Owens and others' No. 4 Haikey, SE cor. NW SW, Section 33-18-14, made 20 bbls. in sand 1,485-1,522 feet. Preston and others' No. 2 Perryman, CEL NW NW, Section 4-17-14, has been completed for 4 bbls. in sand 1,487-1,520 feet. McDonald and others' No. 1 Wolfe, SE cor. NE, Section 24-16-13, has been deepened to sand 1,650-56 feet and completed for 32 bbls.

EAST CENTRAL TEXAS WILDCATS

(Continued from Page 49)

Leonard Pet. Co.'s No. 1 W. S. Pryor, 200 ft. from S and 200 ft. from W of 152-ac. tract, 2,600 ft. from E and 2,350 ft. from N of survey, Hamilton McNutt Sur. ..... Derrick.

Lloyd Oil Corp.'s No. 1 S. G. Andrews, 150 ft. from S, 330 ft. from W of NW 50-ac. tract, 2 miles NW of Kilgore, W. M. F. Hyde Sur. ..... Drlg. plug.

McMillan Pet. Co.'s No. 1 George Fenton, 150 ft. from S and 150 ft. from W of 10 acres of 20-ac. tract, Dolores Sanches Sur. ..... Set 10-in. csg. 142 ft.

Magnolia Pet. Co.'s No. 1 Ben Laird, 150 ft. from E and 150 ft. from S of survey, Isaac Ruddle Sur. .... Coring 3,545 ft.

Magnolia Pet. Co.'s No. 2 B. Rodden, 500 ft. NE and 200 ft. SE of NW cor. of 42-ac. lease, William Robinson Sur. ..... Set pipe 3,572 ft.

George McCamey et al's No. 1 J. F. Richards, 150 ft. from N and 150 ft. from W of 50-ac. tract, Mary Van Winkle Sur. ..... Bailed dry; set 48 hours; 500 ft. oil in hole.

Mid-Kansas Oil & Gas Co.'s No. 1 Dallas Caldwell, 150 ft. from S and N offset to Republic's No. 1 Fisher, John Ruddle Sur. ..... Location.

Mid-Kansas Oil & Gas Co.'s No. 1 J. J. Castleberry, 150 ft. from S and 150 ft. from W of most southerly SW cor. tract, Dolores Sanches Sur. ..... Derrick.

Mid-Kansas Oil & Gas Co.'s No. 1 Burton, 150 ft. from N and 150 ft. from W of 193.9-ac. tract and survey, Hollingsworth Sur. ..... Derrick.

Harry Moss et al's No. 1 G. B. Tenery, 150 ft. from S and 151 ft. from W of 40-ac. tract and 10-ac. lease, William Robinson Sur. ..... Location.

Phares and Sample's No. 1 Maude Smith, 4,800 ft. from W and 1,400 ft. from N of survey, Isaac Skillern Sur. ..... Derrick.

Pilot Oil Co.'s No. 1 G. E. McGrede, 150 ft. from S and 150 ft. from W of 36-ac. tract, Dolores Sanches Sur. ..... Drlg. 2,140 ft.

Republic Prod. Co.'s No. 1 Fisher (Rodden), 200 ft. from N and 200 ft. from E of W 50 acres of 198-ac. tract, John Ruddle Sur. ..... Rig up.

Roy Roberts et al's No. 1 L. M. Colburn, 150 ft. from E and 150 ft. from S of 45-ac. lease, 5,700 ft. from E and 850 ft. from N of survey, Henry Hathaway Sur. ..... Derrick.

C. Rosenfield et al's No. 1 J. A. Knowles, 700 ft. from E, 1,250 ft. from N, William Lyles Sur. ..... Drlg. 390 ft.

Jim Rusk et al's No. 1 G. B. Tenery, 110 ft. from N and 110 ft. from W of 10-ac. lease, 5,050 ft. from W and 49,010 ft. from N of survey, William Robinson Sur. ..... Sidetrack pipe to resume drlg.

Selby Oil & Gas Co.'s No. 1 P. J. Snarley, 200 ft. from N and 200 ft. from E of survey, William Lyndale Sur. ..... Drlg. 3,190 ft.

Shell Pet. Corp.'s No. 1 J. D. Davis, 2,350 ft. from W and 4,100 ft. from N of survey, William Robinson Sur. ..... Set 6⅝-in. csg.; T. D. 3,582 ft.

Simms Oil Co.'s No. 1 W. M. Harley, 150 ft. NE and 150 ft. from SE of 10-ac. lease, William Robinson Sur. ..... Building derrick.

Skipper and Lacey's No. 1 Mrs. Maggie Magrill, 370 ft. from N and 850 ft. from W of 17.7-ac. lease and 47-ac. tract, Dolores Sanches Sur. ..... Shut down 2,635 ft.

B. A. Skipper Oil Co.'s No. 1 Thad Smoddy, 150 ft. from N and 1,368 ft. from E of survey, W. H. Castleberry Sur. ..... Shut down 2,650 ft.

Smith Ref. Co.'s No. 1 J. A. Knowles, 150 ft. from S, 150 ft. from NW of 75-ac. tract, 5,200 ft. from W, 7,700 ft. from N, Mary Van Winkle Sur. ..... Derrick.

Sultan Oil Co.'s No. 1 J. F. Spangler, 330 ft. from E and 300 ft. from S of NE of 160-ac. tract, 2,600 ft. from E and 1,500 ft. from S of survey, G. W. Hooper Sur. ..... Set 6⅝-in. csg. 3,530 ft.

Sutton et al's No. 1 McNeely, 150 ft. from N and 150 ft. from E of 7.73-ac. tract, W. P. Chisum Sur. .... Derrick.

Tidal Oil Co.'s No. 1 Bean heirs, 250 ft. from W and 200 ft. S of railroad in 70-ac. tract, J. S. Carrithers Sur. ..... Derrick.

Tidal Oil Co.'s No. 1 A. A. Castleberry, 250 ft. from S and 250 ft. W of most northern SW cor. of 102-ac. tract, William Robinson Sur. ..... Drlg. 1,478 ft.

Tidal Oil Co.'s No. 1 F. K. Lathrop, 6,400 ft. from W and 5,550 ft. from N of survey, William Robinson Sur. ..... Coring 3,581 ft.

J. R. Travis' No. 1 A. G. Morton, 150 ft. from S and W of 17-ac. tract, William McCurry Sur. ..... Reaming 3,561 ft.; Top Pecan Gap 2,490 ft.; base Pecan Gap 2,840 ft.

Paul Vitek et al's No. 1 Louise Osborne, 150 ft. from E. 150 ft. from S and W 46-ac. of 84-ac. tract, 2,000 ft. from W, 450 ft. from S, R. R. Bobbett Sur. ..... Set 10-in. csg. 100 ft.

James A. Weir Drlg. Co.'s No. 1 J. G. McGrede, 298 ft. from E and 155 ft. from S of Lot No. 3, Dolores Sanches Sur. ..... Derrick.

Werbey and McMinn's No. 1 Solon King, 1,400 ft. from E and 3,300 ft. from S of survey, W. P. Chisum Sur. ..... Drlg. 2,413 ft.

Woodlett et al's No. 1 W. M. Harley, 150 ft. from NE and 150 ft. from SE of 10-ac. tract, William Robinson Sur. ..... Rig up.

Youngblood, trustee's No. 1 W. N. Lamp, 300 ft. from S and E of most northern NW cor. of tract, 5,800 ft. from W, 1,500 ft. from N, David Ferguson Sur. .. Drlg. 2,860 ft.

Yount Lee Oil Co.'s No. 1-A R. S. McKinley, 1,093 ft. S and 2,450 ft. W of NE cor. of 212-ac. tract, William Robinson Sur. ..... Set 205 ft. of 10-in. csg.

Yount Lee Oil Co.'s No. 1-B R. S. McKinley, 1,993 ft. from S and 2,440 ft. W of NE cor. of 212-ac. tract, William Robinson Sur. ..... Rig up.

Yount Lee Oil Co.'s No. 1-B F. K. Lathrop, 300 ft. N and E of SE cor. of J. C. Davis tract, William Robinson Sur. ..... Rig up.

Yount Lee Oil Co.'s No. 2-B F. K. Lathrop, 150 ft. W and 300 ft. N of NW cor. of G. B. Tenery 40-ac. tract, William Robinson Sur. ..... Rig up.

HUNT COUNTY

Mamie S. Hammond's No. 1 W. H. Adams, center of survey, W of Branson Sur., J. A. McFarland Sur. .... Derrick blew down.

LAMAR COUNTY

Everett & Allen's No. 1 Guest, 250 ft. S and 2,046 ft. E of 100-ac. tract, L. Roberts Sur. ..... Shut down 2,168 ft.

RAINS COUNTY

Westbrook Oil Co.'s No. 1 William Cates, 150 ft. N and W of NW cor. of E. S. Knight 46-ac. tract and on Cates 266-ac. tract, Calvin Gage Sur. ..... Shut down 1,800 ft.

RED RIVER COUNTY

Everett & Allen's No. 1 Bryan, 1,200 ft. SW of NE cor. of Bryan 130 acres, P. Vaughn Sur. ..... Location.

Droppleman and Bunely's No. 1 J. W. Cunningham, 250 ft. E and 250 ft. S of 180-ac. tract, S. B. Shi Sur. ..... Reaming hole to make drill stem test.

Everett & Allen's No. 1 E. Howison, 225 ft. S, 185 ft. W of 79-ac. tract, William Humphreys Sur. ..... Derrick.

KILGORE AREA—RUSK COUNTY

Beard and Hammond's No. 1 J. S. Bean, 233 ft. from N and 150 ft. from W of S 10 acres of 20-ac. tract, J. Lewis Sur. ..... Derrick.

H. L. Blackstock's No. 1 W. R. Brightwell, 150 ft. from N and 150 ft. from E of 100-ac. tract and 10-ac. lease, Robert E. Winn Sur. ..... Drlg. plug; T. D. 3,674 ft.

H. L. Blackstock's No. 2 W. R. Brightwell, 150 ft. from E and 150 ft. from S of lease, Robert E. Winn Sur. ..... Drlg. 2,830 ft.

British-American's No. 1 Emma Thompson, 150 ft. from N and W lines of 25-ac. lease, Robert E. Winn Sur. ..... Rig up.

Clark and Cowden's No. 1 Mercer, 150 ft. from N line and 287 ft. from W line of survey, W. A. Young Sur. ..... Shut down 1,620 ft.

Cordova Union Oil Co.'s No. 2 C. O. Christian, 150 ft. from E and 150 ft. from S of lease and tract, Robert E. Winn Sur. ..... Drlg. 2,685 ft.

Cordova Union Oil Co.'s No. 3 C. O. Christian, 2,200 ft. from E line and 1,450 ft. from N line of survey, Robert E. Winn Sur. ..... Drlg. 3,658 ft.

Cordova Union Oil Co.'s No. 4 C. O. Christian, 750 ft. from S and 150 ft. from W of lease and tract, Robert E. Winn Sur. ..... Drlg. 1,500 ft.

Cordova Union Oil Co.'s No. 5 C. O. Christian, 2,100 ft. from W and 1,700 ft. from N of survey, Robert E. Winn Sur. ..... Building derrick.

Cox and Hamon's No. 1 D. M. Peterson, 150 ft. from SE and NE lines of 41-ac. lease, 2,700 ft. from E and 3,350 ft. from N of survey, Isaac Ruddle Sur. .... Set 6⅝-in. csg. 3,629 ft.; T. D. 3,651 ft.

Cox and Hamon's No. 2 D. M. Peterson, 150 ft. from the N and E lines of 40-ac. tract, Isaac Ruddle Sur. ..... Spudding.

Cox and Hamon's No. 3 D. M. Peterson, 150 ft. from N and W lines of 40-ac. tract, Isaac Ruddle Sur. .... Moving in material.

Cranfill & Reynolds' No. 1 George Thompson, 2,150 ft. from W and 2,100 ft. from N line of survey, Robert E. Winn Sur. ..... Drlg. 2,655 ft.

Curtis and Loe's No. 1 J. S. Bean, 1,650 ft. from S. 200 ft. E of NW cor. of 31¼-ac. tract and lease. 4,925 ft. from S, 1,075 ft. from W. J. Lewis Sur. ..... Shut down 2,000 ft.

Devonian's No. 1 R. A. Motley, 150 ft. from the S and E lines of the 147-ac. tract, William Killen Sur. ... Rig up.

East Texas Refining Co.'s No. 1 Wills, 723 ft. from N and 250 ft. from S. 150 ft. from W of 83.24-ac. lease, W. P. Chisum Sur. ..... Location.

East Texas Refining Co.'s No. 2 Wills, 200 ft. from N and 150 ft. from E of 80-ac. lease, W. P. Chisum Sur. ..... Location.

Harry Elliott's No. 1 Carroll, 175 ft. from N and 200 ft. from E of 7-ac. tract, W. R. Cook Sur. ..... Location.

H. W. Elliott's No. 1 Ferrell, 150 ft. from N and 150 ft. from E of 8-ac. tract, W. M. Ryan Sur. ..... Location.

Elsy Drlg. Co.'s No. 1 J. M. Brightwell, 150 ft. from N, 150 ft. from E of 30-ac. tract, 1,150 ft. from E, 150 ft. from N. Robert W. Smith Sur. ..... Shut down.

Elsy Drlg. Co.'s No. 1 George Thompson, 150 ft. from N, 150 ft. from E of tract of 70 acres and 10-ac. lease, 400 ft. S, 500 ft. W. Henry Dobson Sur. ..... Spudded and shut down.

A. R. Erwin's No. 1 J. N. Peterson, 150 ft. from S and 150 ft. from E line of 41.65-ac. tract, Isaac Ruddle Sur. ..... Drlg. 2,820 ft.

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LIMBERT PIPING

Gulf Production Co.'s No. 1 Brightwell, 330 ft. from N and 330 ft. from W line of tract, Robert E. Winn Sur. ... Drlg. 2,947 ft.

Gulf Production Co.'s No. 1 Birdsong, 160 ft. from S and 160 ft. from E line of tract, Isaac Ruddle Sur. ... Drlg. 2,755 ft.; top Pecan Gap 2,560 ft.

Gulf Production Co.'s No. 2 Rose May Griffin, 150 ft. from the N and W lines of 15-ac. lease, Isaac Ruddle Sur. ... Drlg. 3,500 ft.

Gulf Production Co. and Devonian's No. 1 W. L. Laird, 150 ft from E and 150 ft. from S of 60-ac. tract, Isaac Ruddle Sur. ... Building derrick.

Heep Oil Co.'s No. 1 J. E. Bean, 3,100 ft. from N line and 150 ft. from W line of survey, J. Lewis Sur. ... Set 6-in. csg.; T. D. 3,664 ft.

Horseshoe Syndicate's No. 1 W. P. Brightwell, 150 ft. from N line and 150 ft. from W line of tract, Robert E. Winn Sur. ... Drlg. 2,800 ft.

Houston Oil Co.'s No. 1 Brightwell, 150 ft. from N and 150 ft. from E lines of tract, Robert E. Winn Sur. ... Set 10-in. csg.; T. D. 86 ft.

Houston Oil Co.'s No. 1 L. D. Crim, 160 ft. from E line and 200 ft. from N line of survey, Robert E. Winn Sur. ... Drlg. 3,590 ft.

Houston Oil Co.'s No. 2 L. D. Crim, 150 ft. from N line and 300 ft. from E line of tract, Henry Hobson Sur. ... Drlg. 1,938 ft.

Humble Oil & Refining Co.'s No. 8 L. D. Crim, 4,468 ft. from E and 150 ft. from S of survey, E. G. Sevier Sur. ... Shut down 3,694 ft.

Humble Oil & Refining Co.'s No. 10 L. D. Crim, 931 ft. from E and 200 ft. from S of L. D. Crim 628-ac. tract, E. G. Sevier Sur. ... Drlg. 3,745 ft.

Humble Oil & Refining Co.'s No. 11 L. D. Crim, 585 ft. from E and 200 ft. from S of L. D. Crim 628-ac. tract, E. G. Sevier Sur. ... Drlg. 3,667 ft.

Humble Oil & Refining Co.'s No. 12 L. D. Crim, 150 ft. from E and 150 ft. from S of survey, E. G. Sevier Sur. ... Drlg. 3,135 ft.

Humble Oil & Refining Co.'s No. 1 S. S. Laird, 3,692 ft. from S and 150 ft. from E line of survey and 230-ac. tract, Isaac Ruddle Sur. ... Drlg. 3,037 ft.

Humble Oil & Refining Co.'s No. 2 S. S. Laird, 2,250 ft. from E line and 4,625 ft. from N line of survey, Isaac Ruddle Sur. ... Drlg. 3,710 ft.; base Pecan Gap 3,005 ft.

Humble Oil & Refining Co.'s No. 2 B. F. Laird, 450 ft. from the S line and 1,850 ft. from W line of survey, Isaac Ruddle Sur. ... Drlg. 3,463 ft.

Humble Oil & Refining Co.'s No. 4 J. N. Peterson, 271 ft. W of NE cor. of 63-ac. tract, and 200 ft. S of N line of 63-ac. tract, Isaac Ruddle Sur. ... Shut down 3,760 ft.

Humble Oil & Refining Co.'s No. 3 Peterson, 120 ft. from E and 120 ft. from W, being 740 ft. N and 29° W of Peterson No. 1-B, 12-ac. tract, Isaac Ruddle Sur. ... Location.

Humble Oil & Refining Co.'s No. 5 J. N. Peterson, 4,100 ft. from N line and 3,450 ft. from E line of survey, Isaac Ruddle Sur. ... Drlg. 2,995 ft.

Karona's No. 2 J. N. Peterson, 150 ft. from N line and 150 ft. from E line of tract, Robert E. Winn Sur. ... Drlg. 3,568 ft.

Killum and Reed's No. 1 Lou Emma Price, 150 ft. from N and 550 ft. from E line of the W. Brock heirs 59.5-ac. tract, William Chisum Sur. ... Rig up.

La-Tex Gas Co.'s No. 1 Major Kennedy, 333 ft. from W of survey and 166 ft. from S line of Kennedy 100-ac. tract, Daniel Clark Sur. ... Drlg. 3,655 ft.

Lewis Pet. Co.'s No. 1 D. W. Peterson, 150 ft. from S and 150 ft. from W of survey, G. S. Carthews Sur. ... Drlg.

Magnolia Pet. Co.'s No. 5 W. R. Crim, 150 ft. from S line and 550 ft. from E line of the 50-ac. lease, Robert E. Winn Sur. ... Set 6-in. csg.; T. D. 3,640 ft.

Magnolia Pet. Co.'s No. 1 Florey, 150 ft. from N and E lines of tract, Peter Holmes Sur. ... Drlg. 2,620 ft.

Marine Oil Co.'s No. 1 Nat Beason, 150 ft. from S and 150 ft. from W lines of tract, Isaac Ruddle Sur. ... Drlg. 2,950 ft.

Marine Oil Co.'s No. 2 Nat Beason, 150 ft. from W line and 150 ft. from N line of tract, Isaac Ruddle Sur. ... Drlg. 1,600 ft.

Markham and Dunning's No. 1 W. R. Crim, 150 ft. from N and 150 ft. from W of 25-ac. lease, Robert E. Winn Sur. ... Derrick.

McMan Oil Co.'s No. 1 Mrs. Sam B. Wills, 171 ft. from S line and 290 ft. from W line of the N 112-ac. tract, William Chisum Sur. ... Derrick.

Charles L. McMahon's No. 1 Wills, 150 ft. from E and 175 ft. from S of 52-ac. tract, W. P. Chisum Sur. ... Rig up.

Moody-Seagraves' No. 1 Thompson, 150 ft. from N and center E and W of 10-ac. lease, Robert E. Winn Sur. ... Rig up.

Moorefield's No. 1 Jessie Ector, 492 ft. from the N line and 650 ft. from W line of 100-ac. tract, Daniel Clark Sur. ... Drlg. 1,700 ft.

Navarro Oil Co.'s No. 1 R. W. Brightwell, 200 ft. from N and 200 ft. from W lines of E 50 acres of 100-ac. farm, Robert E. Winn Sur. ... Set 6-in. csg. 3,664 ft.

H. V. Oliver and Brown Drlg. Co.'s No. 1 B. F. Hindman, 150 ft. from N, 150 ft. from E of 5-ac. tract, 850 ft. from E, 3,150 ft. from N, Robert Smith Sur. ... Derrick.

John W. Olvey's No. 2 W. R. Crim, 150 ft. from N and 150 ft. from E of tract, Robert E. Winn Sur. ... Drlg. 3,718 ft.

Jim Pollard's No. 1 Ladd, 150 ft. from N and W of 2½-ac. tract and survey, Henry Hobson Sur. ... Location.

C. W. Porter's No. 1 Dave Ladd, 150 ft. from S and E lines of 50-ac. tract, Henry Hobson Sur. ... Rig up.

Reserve Pet. Corp.'s No. 1 Wells, 248 ft. from N and 150 ft. from W of 41.6-ac. lease, W. P. Chisum Sur. ... Location.

J. S. Rushing's No. 1 Thompson, 150 ft. from N line and 219 ft. from W line of lease, Robert E. Winn Sur. ... Building derrick.

Shell Pet. Corp.'s No. 1 Sam B. Wells, 200 ft. out of NW cor. of the S 112-ac. tract, William Chisum Sur. ... Location.

Shell Pet. Corp.'s No. 1 Wills, 200 ft. from N and 200 ft. from W of 182-ac. tract, W. P. Chisum Sur. ... Rig up.

Henry Smith et al's No. 2 D. M. Peterson heirs, 150 ft. from SE line and 150 ft. from E line of 36-ac. tract, Isaac Ruddle Sur. ... Drlg. 3,300 ft.

Smith and Gulf Prod. Co.'s No. 1 D. M. Peterson, 330 ft. from S and 330 ft. from W line of 92.08-ac. tract, Isaac Ruddle Sur. ... Set 6⅝-in. csg.; T. D. 3,664 ft.

Smith and Gulf Prod. Co.'s No. 2 D. M. Peterson, 150 ft. from S and 150 ft. from E lines of 92.08-ac. tract, Isaac Ruddle Sur. ... Drlg. 1,503 ft.

Snowden and McSweeney's No. 1 Ben Laird, 179 ft. from E and 100 ft. from S lines of 143-ac. tract, Isaac Ruddle Sur. ... Drlg. 2,600 ft.

Snowden and McSweeney's No. 2 Ben Laird, 150 ft. from E and 150 ft. from N of 143-ac. tract, Isaac Ruddle Sur. ... Set 180 ft. of 12½-in. csg.

Sun Oil Co.'s No. 1 Ed Barker, 200 ft. from E and 200 ft. from S of 77-ac. lease, A. M. Ryan Sur. ... Location.

Sun Oil Co.'s No. 1 Beal, 200 ft. from E and 200 ft. from S of Beal 180-ac. tract, W. P. Chisum Sur. ... Location.

Stanolind Oil & Gas Co.'s No. 1 Jacking, 150 ft. from E and 150 ft. from S of 10-ac. tract, W. P. Chisum Sur. ... Location.

Turman Oil Co.'s No. 1 Brightwell, 150 ft. from the N and E lines of 30-ac. lease, Robert E. Winn Sur. ... Rig up.

W. D. Walton's No. 1 Brightwell, 150 ft. from N and E lines of the S 20 acres of W 50 acres of Brightwell 100-ac. tract, Robert E. Winn Sur. ... Drlg. 1,500 ft.

Ward et al's No. 1 H. P. Leverett, 150 ft. out of the NW cor. of the 38-ac. tract, Meredith McCabe Sur. ... Derrick.

Warner-Quinlan's No. 1 S. S. Laird, 150 ft. from N line and 150 ft. from W line of tract, Isaac Ruddle Sur. ... Drlg. 2,925 ft.

Weaver-Crim Corp.'s No. 1 Dave Ladd, 150 ft. from the S and W lines of tract N offset to Woodley's No. 1 Ladd, Henry Hobson Sur. ... Location.

Woodley Pet. Corp.'s No. 1 George Thompson, 150 ft. from N line and center of E and W lines of Woodley 10-ac. lease of George Thompson 70-ac. tract, Robert E. Winn Sur. ... Derrick.

Woodley Pet. Corp.'s No. 2 D. M. Peterson, 150 ft. from S line and 150 ft. from W line of 20-ac. tract, Isaac Ruddle Sur. ... Drlg. 3,123 ft.; base Pecan Gap 3,086 ft.

Woodley's No. 1 Dave Ladd, center of 2½-ac. tract, Henry Hobson Sur. ... Rig up.

JOINER POOL—RUSK COUNTY

Alford et al's No. 1 W. L. Thrash, 1,103 ft. from N, 420 ft. from E of SE cor., B. Smith Sur. ... Derrick.

Andrade et al's No. 2 Thrash, 520 ft. from E, 1,855 ft. from S of 78-ac. tract, M. J. Prue Sur. ... Building derrick.

Andrade et al's No. 3 Thrash, 845 ft. from E, 1,775 ft. from S of 78-ac. tract, M. J. Prue Sur. ... Derrick pattern.

Anderson's No. 1 Giles, 1,900 ft. from E and 4,600 ft. from N of survey, M. J. Prue Sur. ... Derrick.

G. S. Anderson's No. 2 Jobe, 150 ft. from N and 150 ft. from E of W 25-ac. tract, Juan Ximenes Sur. ... Drlg. 3,139 ft.

Armstrong and Pitt's No. 1 Cooper, 2,150 ft. from W and 166 ft. from N of survey .. ... Derrick.

Babcock Bros.' No. 1 Camp, 150 ft. from N, 171 ft. from E of 4-ac. tract, Juan Ximenes Sur. ... Swabbing; T. D. 3,607 ft.

Bahan's No. 1 W. M. Camp, 150 ft. from N, 150 ft. from W of 25-ac. tract, Juan Ximenes Sur. ... Building derrick.

Ball and Malone's No. 2 Bradford, 6,100 ft. from S line and 225 ft. from W line of survey, Juan Ximenes Sur. ... Set 6⅝-in. csg.; T. D. 3,656 ft.

Big Indian Oil Co.'s No. 1 Denson, 360 ft. from E and 4,100 ft. from S of survey, M. J. Prue Sur. ... Set 235 ft. of 12½-in. csg.

R. I. Carter's No. 1 A. Thrash, 2,650 ft. from E and 6,250 ft. from S of survey, M. J. Prue Sur. ... Drlg. 3,266 ft.

Consolidated Oil Co.'s No. 2 Jobe, 3,800 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ... Drlg. 3,650 ft.

Consolidated Oil Co.'s No. 3 Jobe, 4,500 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ... Fishing 3,577 ft.

Consolidated Oil Co.'s No. 4 Jobe, 5,025 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ... Drlg. 3,110 ft.

Consolidated Oil Co.'s No. 5 Jobe, 243 ft. from S and 1,970 ft. from W of lease, 5,600 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ... Set 6⅝-in. csg.; T. D. 3,534 ft.

E. L. Chapman's No. 1 A. P. Finney, 150 ft. from W of E 20 acres of 102-ac. tract, Isaac G. Parker Sur. ... Drlg. 2,045 ft.

Cranfill & Reynolds' No. 1 Calvin Young, 275 ft. from E, 1,780 ft. from S of Young 300-ac. tract, M. J. Prue Sur. ... Drlg. 3,595 ft.

Dan Brooks, trustee's No. 1 Alford, 1,000 ft. from E and 200 ft. from S of Alford 100-ac. tract, J. R. Reel Sur. ... Drlg. 2,405 ft.

George Demonstrend's No. 1 J. A. Bridwell, 150 ft. N, 150 ft. E of Bridwell E 73-ac. tract, M. J. Prue Sur. ... T. D. 3,620 ft.

Dan Dillon et al's No. 1 W. H. Frederick (Jake), 150 ft. from E, 150 ft. from S of 50-ac. tract, Juan Ximenes Sur. ... Derrick.

East Texas Oil Co.'s No. 1 C. D. Ashby, 856 ft. N, 1,774 ft. from W of Ashby 119-ac. tract, Juan Ximenes Sur. ... Shut down 2,160 ft.

Elsy Drlg. Co.'s No. 1 W. M. Camp, 150 ft. from N, 171 ft. from E of Camp 38-ac. tract, Juan Ximenes Sur. ... Drlg. 3,578 ft.

Federated Oil Co.'s No. 1 Camp, 150 ft. from S and 150 ft. from W of Camp 61-ac. farm, Juan Ximenes Sur. ... Fishing; T. D. 3,675 ft.

Fitzsimmon's No. 1 Alford, 428 ft. from S and 4,500 ft. from W of survey, I. G. Parker Sur. ... Rig up.

Foster and Deep Rock Oil Co.'s No. 1 Holland, 760 ft. from W and 4,760 ft. from N of survey, Juan Ximenes Sur. ... Drlg. 2,528 ft.

Foster and Deep Rock Oil Co.'s No. 2 Camp, 150 ft. from N and 150 ft. from E of lease, 300 ft. NE of No. 1, Juan Ximenes Sur. ... Set 6-in. csg. 3,567 ft.

Frank Foster and Little's No. 1 Mayfield-Alford, 150 ft. from N and 150 ft. from W of 45-ac. lease, Juan Ximenes Sur. ... Coring 3,619-55 ft.

Frank Foster and Little's No. 2 Mayfield-Alford, 150 ft. from N and 150 ft. from E of 4.5-ac. lease, Juan Ximenes Sur. ... Set 6-in. csg. 3,574 ft.

Foster and Deep Rock Oil Co.'s No. 3 Ashby, 150 ft. from S. 200 ft. from W of lease, Juan Ximenes Sur. ... Coring 3,645-50 ft.

Foster & Kolp's No. 2 Mayfield-Alford, 150 ft. from E. 150 ft. from S of lease, about 1,300 ft. from W line and 150 ft. from S line of Mayfield-Alford 105-ac. tract, Juan Ximenes Sur. ... Preparing to swab; T. D. 3,658 ft.

Greely and Baker's No. 1 Thrash, 2,600 ft. from W and 1,850 ft. from N of survey, Juan Ximenes Sur. ... Drlg. 2,200 ft.

Griffith's No. 1 J. F. Lowe, 800 varas E of W line and 200 varas S of N line of 268-ac. tract, William Williams Sur. ... Drlg. 2,700 ft.

Haynes Drlg. Co.'s No. 3 Brown, 150 ft. from S, 150 ft. from W of lease, M. J. Prue Sur., Juan Ximenes Sur. ... Drlg. plug 3,646 ft.

Haynes Drlg. Co.'s No. 4 Brown, 150 ft. from N, 150 ft. from W, M. J. Prue Sur. ... Swabbing 3,694-3,712 ft.

Humble Oil & Refining Co.'s No. 1 Kangerga, 3,100 ft. from E line and 4,600 ft. from N line of survey, M. J. Prue Sur. ... Drlg. 1,365 ft.

Humble Oil & Refining Co.'s No. 2 Kangerga, 4,400 ft. from E and 6,900 ft. from S of survey, M. J. Prue Sur. ... Drlg. 2,253 ft.

H. L. Hunt's No. 1 Finney, 150 ft. from E and 150 ft. from S of survey, R. H. Pinney Sur. ... Drlg. 1,700 ft.

H. L. Hunt's No. 1 Camp, 4,625 ft. from W and 3,880 ft. from N of survey, Juan Ximenes Sur. ... Shut down 3,625 ft.

Hunt's No. 2 Bradford, 1,320 ft. from E, 150 ft. from S of Blk. No. 12, Juan Ximenes Sur. ... Will standardize and drill deeper; T. D. 3,583 ft.

Jones Drlg. Co.'s No. 1 Thrash, 660 ft. from N, 154 ft. from S of SE cor. of J. T. Brown 76.93-ac. tract, 600 ft. from S and 2,200 ft. from E of survey, M. J. Prue Sur. ... Drlg. 3,510 ft.

K. & M. Oil Co.'s No. 1 Lum Taliaferro, 150 ft. from N and 1,092 ft. of Taliaferro 62-ac. tract, Juan Ximenes Sur. ... Set 6-in. csg. 3,628 ft.

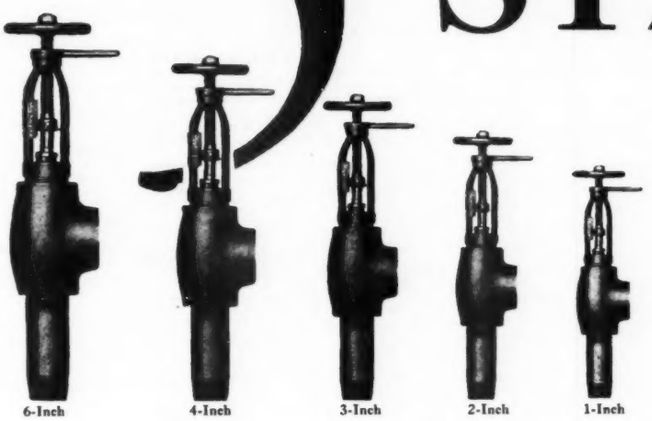
E. C. Laster's No. 1 Daisy Bradford, 150 ft. from E. 150 ft. from S of Lot 14, Juan Ximenes Sur. ... Location.

E. C. Laster et al's No. 1 B. B. Gray, 1,650 ft. N, 3,425 ft. from E of B. B. Gray 228.25-ac. tract, McLain Sur. ... Waiting of csg. 3,487 ft.

Laster et al's No. 1 Maxwell, 3,000 ft. from E and 623 ft. from N of survey, I. G. Parker Sur. ... Derrick.

Leonard Pet. Co.'s No. 1 Alford, 446 ft. E and 393 ft. S of SW cor. of T. J. Moore Sur., I. G. Parker Sur. ... Drlg. 1,300 ft.

5 Standard SIZES



With the addition of the one-inch size the Shaffer Adjustable Flow Bean is now being made in five standard sizes. This device controls the flow of oil and gas from a well, throttling it to any desired pressure and rate of flow. The simple hand wheel control permits minute adjustments without disturbing the current of oil and gas coming through the flow lines.

Write for Illustrated Booklet

SHAFFER TOOL WORKS

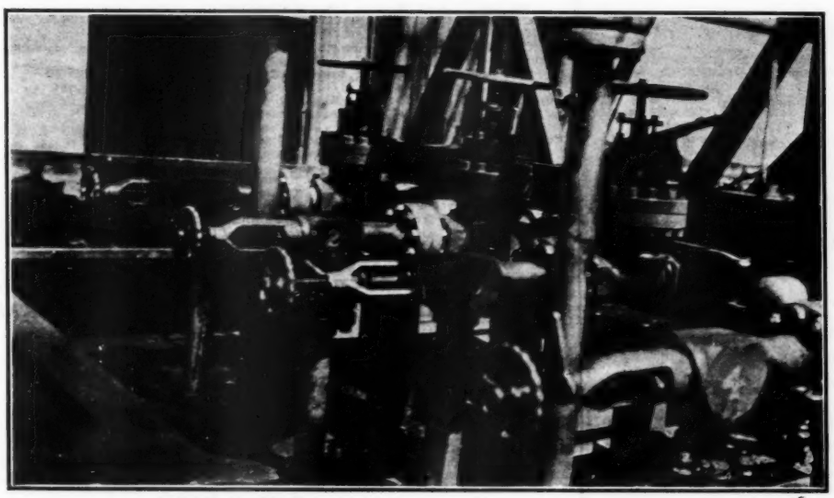
BREA, CALIFORNIA

OKLAHOMA CITY—Fluid Packed Pump Co., Mid-Continent

HOUSTON—Robt. J. Miller Co.

FOREIGN—Oil Well Supply Co.

The Shaffer Adjustable Flow Bean gives smooth flow for high pressure. A turn of the handwheel gives instant adjustment, orifice diameter in sixty-fourths being indicated on dial. Multiple installations of four-inch and six-inch Shaffer Beans are controlling the world's biggest producers. Its extremely strong construction and the simple handwheel control, with easily read gauge, have made this bean the most popular high-pressure valve for its purpose in the world.



A Kettleman Hills installation showing 4 of the 7 Shaffer adjustable Flow Beans in the Christmas Tree

SHAFFER *adjustable* FLOW BEAN

Lide-Rowe Oil Co.'s No. 1 Calvin Young, 150 ft. from E, 2,690 ft. from S of Young 393-ac. farm, M. J. Prue Sur. ..... Drlg. 3,425 ft.

Peter Lively et al's No. 1 Cox, 200 ft. N and 155 ft. W of SW cor. of T. L. Moore Sur., R. H. Pinney Sur. ..... Drlg. 1,800 ft.

Luling Oil & Gas Co.'s No. 1 Frederick, 4,300 ft. from W and 1,425 ft. from N of survey, Juan Ximenes Sur. ..... Drlg. 2,025 ft.

Madden et al's No. 1 Mose Mayfield, 960 ft. from the S and 160 ft. from W line of 154-ac. lease, Daniel Clark Sur. ..... Derrick.

Mass and Tucker's No. 1 Matthews, 3,244 ft. from N, 4,356 ft. from E, Dalines Cartimas Sur. ..... Drlg. 2,700 ft.

McMillan et al's No. 1 Blackwell, 185 ft. from E and 185 ft. from S of most eastern SE cor. of Blackwell tract, M. J. Prue Sur. ..... Drlg. 1,840 ft.

Merrick Oil Co.'s (Gibson & Johnson) No. 1 Ashby, 125 ft. from E, 125 ft. from S of Ashby 45-ac. tract, Juan Ximenes Sur. ..... Drlg. 3,510 ft.

Merritt et al's No. 1 Cooper, 155 ft. from E and 170 ft. from S of most easterly SE cor. of T. J. Moore Sur. ..... Drlg. 2,960 ft.; top Pecan Gap 2,544 ft.

Mid-Kansas Oil & Gas Co.'s No. 1 Moore, 150 ft. from N, 162 ft. from E of Moore 200-ac. tract, M. J. Prue Sur. ..... Preparing to swab; T. D. 3,699 ft.

Moss & Urschel's No. 1 Mayfield-Alford, 221 ft. from S, 200 ft. from W of 10-ac. lease, Juan Ximenes Sur. ..... Drlg. 3,672 ft.

Moss & Urschel's No. 2 Mayfield-Alford, 211 ft. from S and 790 ft. from W of lease, Juan Ximenes Sur. ... Drlg. 3,266 ft.

Nat Saddler's No. 1 Ed Sparks, 350 ft. from E, 150 ft. from S of survey, L. C. Riggs Sur. ..... Drlg. 1,200 ft.

Olsen Bros.' No. 2 Brown, 150 ft. from S, 150 ft. from E of 76.93-ac. tract, 4,900 ft. from N and 1,750 ft. from E of lease, M. J. Prue Sur. ..... Plugged back to 1,500 ft.; sidetracking.

Olsen Bros.' No. 3 Brown, 340 ft. S along W line of T. J. Brown 76-ac. from NW cor. of same and 200 ft. E at right angles to W line of M. J. Prue Sur. ..... Drlg. 2,478 ft.

Pearl Oil Co.'s No. 1 D. W. Eaton, 975 ft. from most southerly S line of middle tract and 400 ft. from W line of Francisco Cordova Sur. ..... Drlg. 3,020 ft.

Perry et al's No. 1 Thrash, 2,050 ft. from W and 3,200 ft. from N of survey, Juan Ximenes Sur. ..... Drlg. 2,620 ft.

Petroleum Marketing Co.'s No. 1 Arnold, 350 ft. from E and 2,100 ft. from S of survey, M. J. Prue Sur. .... Hole junked; T. D. 3,073 ft.; preparing to skid rig.

Petroleum Marketing Co.'s No. 1 Frederick, 5,100 ft. from W and 600 ft. from N of survey, Juan Ximenes Sur. ..... Run tubing 3,632 ft.

A. W. Phillips' No. 1 Deason, 540 ft. from E and 550 ft. from S of D. F. and A. J. Deason tract, Juan Ximenes Sur. ..... Waiting on csg.; T. D. 150 ft.

Phillips Petroleum Co.'s No. 1 Alford, 3,700 ft. from W and 60 ft. from S of survey, I. G. Parker Sur. .... Drlg. 1,210 ft.

Phillips Pet. Co.'s No. 1 Wilson, 142 ft. from E and 135 ft. from S of Phillips 51-ac. tract, M. J. Prue Sur. ..... Location.

Pilot's No. 2 Finney, 1,850 ft. from W and 1,500 ft. from N of survey, Juan Ximenes Sur. ..... Drlg. 2,380 ft.

Pioneer Oil Co.'s No. 1 Taliaferro, 300 ft. from W and 3,200 ft. from N of survey, Juan Ximenes Sur. ..... Set 6-in. csg. 3,694 ft.

Pioneer's (Moody-Seagraves) No. 1 Deason, 2,050 ft. from E and 1,525 ft. from S of survey, M. J. Prue Sur. ..... Waiting on csg. 245 ft.

Pioneer Oil Co.'s No. 1 Thrash, 1,400 ft. from E line and 4,400 ft. from S line of survey, M. J. Prue Sur. ..... Set 6-in. csg.; T. D. 3,668 ft.

Pioneer Oil Co.'s No. 2 Thrash, 5,850 ft. from S and 1,900 ft. from E of survey, M. J. Prue Sur. ..... Drlg. 3,625 ft.

Pioneer Oil Co.'s No. 3 Thrash, 1,275 ft. N along E line of A. Thrash 71-ac. tract from SE cor. of same and 485 ft. W at right angles to E line, M. J. Prue Sur. ..... Derrick.

Pioneer Oil Co.'s No. 4 Thrash, 1,900 ft. from E and 4,725 ft. from S of survey, M. J. Prue Sur. ..... Location.

Pioneer Oil Co.'s No. 5 Thrash, 1,900 ft. from E line and 5,025 ft. from S line of survey, M. J. Prue Sur. ..... Drlg. 2,709 ft.

Robertson Drlg. Co.'s No. 1 Deason, 3,400 ft. from S and 1,800 ft. from W of survey, Juan Ximenes Sur. ..... Rig up.

Robert's No. 1 School Land, center of 4-ac. school tract on the middle S line between Gate 70-ac. and Selman 72-ac. tracts, M. J. Prue Sur. ..... Drlg. 3,550 ft.

Rusk County Oil Co.'s No. 1 Robertson, 150 ft. from N along W line of George Guthrie Sur. from SE cor., 150 ft. W of E line of Robertson 20-ac. tract, R. H. Pinney Sur. ..... Fishing 1,285 ft.

J. Rusk et al's No. 1 W. B. Thompson, 150 ft. out of SW cor. of 59-ac. Thompson tract, John Dougherty Sur. ..... Set liner; T. D. 3,707 ft.

Shaw Oil Co.'s No. 1 Robertson, 1,780 ft. from W and 3,050 ft. from S of survey, Juan Ximenes Sur. ..... Shut down 900 ft.

Sinclair Oil & Gas Co.'s No. 1 Daisy Bradford, 150 ft. from N and 150 ft. from E of Daisy Bradford 35-ac. lease, Juan Ximenes Sur. ..... Set 6-in. csg. 3,612 ft.; T. D. 3,620 ft.

Sinclair Oil & Gas Co.'s No. 2 Daisy Bradford, 150 ft. from N and 150 ft. from E of 35-ac. lease, Juan Ximenes Sur. ..... Set 6-in. csg.; T. D. 3,638 ft.;

Sinclair Oil & Gas Co.'s No. 5 Holland, 200 ft. from N and 200 ft. from W of 50-ac. lease, Juan Ximenes Sur. ..... Preparing to swab; T. D. 3,700 ft.

Sinclair Oil & Gas Co.'s No. 7 Holland, 925 ft. from E and 150 ft. from S of lease, Juan Ximenes Sur. .... T. D. 3,695 ft.

Snetcher and Pittman's No. 1 Cox, 1,390 ft. from N and 165 ft. from W of 129-ac. Cox farm, R. H. Pinney Sur. ..... Drlg. 3,525 ft.; top Pecan Gap 2,710 ft.; base Pecan Gap 3,096 ft.

Stokes et al's No. 1 Mrs. M. M. Talley, 4,100 ft. from W and 1,050 ft. from N of survey. ..... Derrick.

Sun Oil Co.'s No. 1 S. A. Selman, 150 ft. from N and 150 ft. from E of 56-ac. tract, M. J. Prue Sur. ..... Derrick.

Tennant, receiver's No. 1 Harvey Brooks, 1,200 ft. from N, 150 ft. from W of Brooks 176-ac. tract, M. J. Pure Sur. ..... Preparing to wash; T. D. 3,695 ft.

E. R. Tennant's No. 2 Brooks, 1,300 ft. from E and 6,500 ft. from S of survey, M. J. Prue Sur. ..... Drlg. 3,256 ft.

E. R. Tennant's No. 2 Bradford, 6,720 ft. from N and 1,900 ft. from W of survey, Juan Ximenes Sur. .... Preparing to set liner; T. D. 3,670 ft.

E. R. Tennant's No. 3 Bradford, 1,890 ft. from W and 6,850 ft. from S of survey, Juan Ximenes Sur. ..... Set 6-in. csg.; T. D. 3,610 ft.

Tidal Oil Co.'s No. 2 Holland, 150 ft. from N and 197 ft. from E of lease, Juan Ximenes Sur. ..... Set 6-in. csg.; T. D. 3,660 ft.

Turman's No. 1 Young, 4,700 ft. from S and 3,000 ft. from E of survey, M. J. Prue Sur. ..... Drlg. 3,535 ft.

Vaughn et al's No. 1 Young, 2,950 ft. from E and 6,300 ft. from S of survey, M. J. Prue Sur. ..... Top Pecan Gap 2,670-3,065 ft.; set 6-in. csg.; T. D. 3,653 ft.

Vitek's No. 1 Jobe, 3,950 ft. from W and 3,260 ft. from N of survey, Juan Ximenes Sur. ..... Derrick.

Ward Oil Co.'s No. 1 Cox, 1,700 ft. from W and 1,450 ft. from N of survey, R. H. Pinney Sur. ..... Derrick.

Williams and Dunning's No. 1 Young, 4,400 ft. from E and 2,450 ft. from S of survey, M. J. Prue Sur. ... Drlg. 1,300 ft.

West Texas Oil & Ref. Co.'s No. 1 John Tolly, 150 ft. from N and 150 ft. from E of 11-ac. tract, Juan Ximenes Sur. ..... Coring 3,576-86 ft.

Witherspoon et al's No. 1 Daisy Bradford, 200 ft. from S of N line, 1,500 ft. E of W line of Bradford 23-ac. lease, Juan Ximenes Sur. ..... Set 6-in. csg.; T. D. 3,654 ft.

SMITH COUNTY

Big Indian Oil Co.'s No. 1 Mills, 1,045 ft. E along S line of C. Mills 67.8-ac. farm, SW cor. of same and 710 ft. N at right angles to S line of 67.7 acres, J. Jordan Sur. ..... Derrick.

G. B. Bunte, trustee's No. 1 A. S. Jarvis, 150 ft. from S and 150 ft. from W of 267-ac. tract, Juan Vargus Sur. ..... Rig up.

Howard Petroleum Co.'s No. 1 Lee Holt estate, 6,000 ft. from N and 1,000 ft. from S of survey, Barnes Clark Sur. ..... Moving in rig.

Joiner et al's No. 1 W. W. Wright, 847.5 varas from E and 647 varas from S of NW Wright 225-ac. tract, Van Sickle Sur. ..... Drlg. 1,863 ft.

Guy V. Lewis' No. 1 S. S. Cooke, 150 ft. from E and 150 ft. from S of Cooke 58.5-ac. tract, J. Jordan Sur. ..... Drlg. plug; T. D. 3,676 ft.

Thayer & Rogers' No. 1 Willingham, 150 ft. N and W of 14.5-ac. tract, Jacob Hernin Sur. ..... Shut down 2,400 ft.

Winona O. & G. Co.'s No. 1 Freeman, 150 ft. from S, W of 89-ac. tract in A. J. Legrone Sur., 4 miles SE of Winona ..... Shut down 3,681 ft.

UPSHUR COUNTY

D. Armand et al's No. 1 Marshall Fluellan, 450 ft. from N and 460 ft. from E of W 50 acres of S 100 acres of Fluellan 417-ac. farm, Marshall Mann Sur. ..... Drlg. plug 3,779 ft.

Arcadia Refining Co.'s No. 1 Johnson, 1,900 ft. from N and 1,000 ft. from E of survey, J. H. Mallory Sur. ..... Derrick.

Brennan and Wood's No. 1 Robertson, center of Robertson 41ac. tract, Ira Stephenson Sur. ..... Derrick.

Penn Oil Co.'s No. 1 Gage (R. W. Maberry), 700 ft. from S and 1,000 ft. from W of Gage 100-ac. tract, J. B. Davenport Sur. ..... Rig up.

E. R. Perkins et al's No. 1 Kay, 660 ft. from S and 660 ft. from W of survey, Thomas J. Elliott Sur. .... Location.

VAN ZANDT COUNTY

T. Daniels' No. 1 Fannie Cumbine, 185 ft. S and 175 ft. E of NW cor. 156-ac. tract, John Wright Sur. ..... Temporarily abandoned.

Dennis Oil Co.'s No. 1 C. W. Morris, 100 ft. from N and 300 ft. from E line of Morris 160-ac. tract in C. L. Morris Sur., 5 miles SE of Ben Wheeler ..... Temporarily abandoned.

J. C. Fare's No. 1 P. S. Hand, C of Hand's 50-ac. tract, William Shuman Sur. ..... Fishing 5,160 ft.

H. Helms et al's No. 1 Bogue, 647 ft. W and 155 ft. S of SE cor. of J. M. Brown 70-ac. in Marshall University Sur., SE of Van ..... Shut down 3,098 ft.

Humble Oil & Ref. Co.'s No. 1 L. A. Dowdle, 1,027 ft. N of S line and 150 ft. E of W line, William Daniel Sur. ..... Temp. abnd. 2,987 ft.

Imperator Oil Co.'s No. 2 G. W. Carter, 175 ft. from S and 35 ft. from W of G. W. Carter 171-ac. tract, William Daniel Sur. ..... Shut down.

Kelly Oil & Gas Co.'s No. 1 Lemsford, center of Lemsford tract, John Conner Sur. ..... Shut down 2,300 ft.

Nell McMehory's No. 1 R. V. Murphy, 150 ft. from N and 150 ft. W of survey, H. Bailey Sur. ..... Shut down 2,450 ft.

Pure Oil Co.'s No. 2 A. F. Mague, 250 ft. N of most northerly S line and 250 ft. W of E line, Nacogdoches School Land ..... Cement setting 2,763 ft.

Pure Oil Co.'s No. 2 Crim, 250 ft. from S and 200 ft. from E of 40-ac. lease in John Walling Sur. ..... Fishing 2,675 ft.

Pure Oil Co.'s No. 5, 200 ft. E of W line and 250 ft. N of S line of Tract No. 3, John Walling Sur. ..... Derrick.

Pure Oil Co.'s No. 2 R. E. Cade, 200 ft. W of E line and 250 ft. N of S line of lease, John Walling Sur. ..... Location.

Pure Oil Co.'s No. 2 A. G. Tunnell, 250 ft. N of S line and 200 ft. W of E line, John Walling Sur. ..... T. D. 2,942 ft.; testing; shut in.

Pure Oil Co.'s No. 6 A. R. Tunnell, 203 ft. N of N line of A. D. Clark 2-ac. tract and 150 ft. W of E line of lease, John Walling Sur. ..... Run tubing; T. D. 2,955 ft.

Pure Oil Co.'s No. 1 Davis, 127 ft. from S and 200 ft. from W of 139-ac. tract, Nacogdoches County School Land ..... Derrick standing.

Pure Oil Co.'s No. 4 W. F. Swain, 250 ft. S of N line and 200 ft. W of E line of lease, Mund Gross Sur. .. Derrick.

Pure Oil Co.'s No. 6 W. T. Jarman, 344 ft. W of E line and 250 ft. S of N line of 8-ac. tract, Nacogdoches County School Land ..... Testing 2,956 ft.

Pure Oil Co.'s No. 3 Ella York, 250 ft. S of N line and 250 ft. E of W line, John Walling Sur. ..... Shut down 2,455 ft.

Pure Oil Co.'s No. 10 J. T. Thompson, 150 ft. E of W line and 142 ft. N of N line of Van Methodist Church, Mund Gross Sur. ..... Running tubing.

Pure Oil Co.'s No. 2 H. C. Gilbert, 1,003 ft. N of S line and 200 ft. E of most easterly W line of lease, Mund Gross Sur. ..... Drlg. 1,884 ft.

Pure Oil Co.'s No. 3 A. G. Mayfield, 250 ft. S of N and 250 ft. W of E line of lease, Nacogdoches School Land Sur. ..... Location.

Pure Oil Co.'s No. 4 M. F. Shirley, 491 ft. E of W line and 90 ft. N of S line of lease, John Walling Sur. ..... Location.

Roy Stumpff's No. 1 Riggs, 169 ft. from E and 155 ft. from S of 3-ac. tract, William Daniel Sur. ..... Derrick (rotary).

Van Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. ..... Shut down 1,028 ft.

WOOD COUNTY

Loche & Clark's No. 1 A. C. Pick, 165 ft. S of NE cor. G. C. Reeves 25-ac. tract, Daniel Fuller Sur. .... Shut down 997 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 50)

CROCKETT COUNTY

Doleman & Moore's No. 1 Perner, 3,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur. ... Spudded and shut down.

CULBERSON COUNTY

Cranfill Bros. and Sholts' No. 1 Seay, 2,310 ft. from S and W Sec. 45, Blk. 60, Public School Land ..... Shut down 1,930 ft.

Grisham & Hunter's No. 2 Garren, 2,475 ft. from S and 1,566 ft. from E Sec. 20, Blk. 89, Public School Land.. Shut down 1,520 ft.

Kornrumpf et al's No. 1 Garren, 330 ft. S and W Sec. 15, Blk. 79, Public School Land ..... Drlg. 1,280 ft.

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW Sec. 46, Blk. M, E.L.&R.R. Sur. ..... Spudded 20 ft. and shut down.

ECTOR COUNTY

Galt, Brown & Penn's No. 1 Cowden, C SE Sec. 12, Blk. 44, Twp. 2s, T.&P. Sur. ..... Running 10-in. casing 1,030 ft.

H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk. 46, Twp. 3s, G. M. M.Br.&A. Sur. ..... Shut down 3,275 ft.

Southern Crude Oil Pur. Co.'s No. 2 Crowder & Co., 660 ft. from S and W of NE cor. Sec. 34, Blk. 43, Twp. 1n, T.&P. Sur. ..... Cem. 8¼-in. casing 3,972 ft.

EL PASO COUNTY

Lane-The Texas Company's No. 1 Malone, 2,110 ft. from SW and NW of Sec. 46, J. M. Day Sur. ..... Shut down 2,089 ft.

Tri-State Oil Co.'s No. 1 Bobadella, 1,325 ft. from S and E lines Sur. No. 254, S.F. No. 7,247 ..... Shut down 540 ft.

FISHER COUNTY

Roeser & Pendleton's No. 1 Gribble (Russell), 660 ft. from S and 440 ft. from W of NW Sec. 210, B.B.B. &C. Sur. ..... Running 6-in. casing 3,050 ft.

Stanolind Oil & Gas Co.'s No. 2 Steele, 1,200 ft. E and 330 ft. N or SW cor. Sec. 210, B.B.&C. Sur. ..... Moving in.

GAINES COUNTY

Texas Consolidated Oil Co. et al's No. 1 Jones, 2,310 ft. from NE Sec. 4, Blk. A-8, P.S.L. Sur. ..... Shut down 3,435 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 4, H.&G.N. Sur. ..... Spudded and shut down.

Perry & Posey's No. 1 Justice, 1,980 ft. from S and 1,680 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-ft. cable tool test) ..... Shut down 1,042 ft.

GLASSCOCK COUNTY

World Oil Co.'s No. 3-C McDowell, 2,310 ft. from S and W of NE cor. Sec. 21, Blk. 34, Twp. 2s, T.&P. Sur. ... Temp. aband.; total depth 600 ft.

HOWARD COUNTY

Continental Oil Co.'s No. 1 Brindley, 660 ft. from S and E of Sec. 18, Blk. 33, Twp. 1s, T.&P. Sur. ..... Drlg. 1,845 ft.

Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W Sec. 14, Blk. 20, Twp. 1s, T.&P. Sur.. Spudded and shut down.

Moody Oil Corp.'s No. 33-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ..... Temp. aband. 261 ft.

HUDSPETH COUNTY

Patillo & Welch's No. 1 Briggs, 300 ft. from S and W Sec. 13, Blk. 73, Twp. 7, T.&P. Sur. ..... Drlg. 300 ft.

Thelson's No. 1 University, 3,050 ft. from S and 2,225 ft. from E of Sec. 17, Blk. E ..... Spudded 35 ft. and shut down.

IRION COUNTY

Central Oil Co.'s No. 2 Horney, 150 ft. from N and 1,320 ft. from E Sec. 2, Blk. 3, H.&T.C. Sur. ..... Shut down 1,360 ft.

Denny & Andrews' No. 1 Tankersley, 1,000 ft. from E and 460 ft. from S of H. J. Volker Sur. No. 723 .... Testing 1,372 ft.

Dixie Oil Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ..... Drlg. 3,255 ft.

Perry Fox's (formerly carried as Crawford et al's) No. 1 Williams, 450 ft. from N and 150 ft. from W, Sec. 8, Gonzales County School Land Sur. ..... Drlg. 1,120 ft.

Straughn & Texannati Oil Co.'s No. 1 Tankersley, 150 ft. from S and 750 ft. from W of Sec. 4, Gonzales County School Land ..... Plugging back to 1,220 ft. to shoot; total depth 1,506 ft.

JONES COUNTY

Bond & Trout's No. 1 Williams, 330 ft. S and E of SW cor. of J. W. Martin Sur. A-1,308 in Sec. 12 ..... Shut down 2,581 ft.

Jameson et al's No. 1 King, 4,681 ft. from S and 150 ft. from E of M. Bueno Sur. No. 196 ..... Drlg. 1,070 ft.

Hardly Able Oil Co.'s No. 1 Butter, 5,790 ft. from S and 330 ft. from E of W. Littlefield Sur. No. 282, Abst. 251 ..... 8¼-in. casing 2,065 ft.

Shaheen et al's No. 1 Chittim, 165 ft. from S and W of 139.8-acre farm in G. Martinez Sur. No. 195 ..... Swabbed 20 bbls. in 24 hours.

Yingling et al's No. 1 Williams, 330 ft. N and E of SE cor. of Cade 160-acre tract but in Williams 200-acre farm, Sec. 17, Blk. 19, T.&P. Sur. ..... Total depth 2,543 ft.; lowering 6-in. casing; swabbed 196 bbls. in 15 hours.

Young & McNeill's No. 1 L. R. Cade, 150 ft. from N and 450 ft. E of NW cor. of J. A. Williams 200-acre tract in Sec. 17, but in Sec. 12, Blk. 19, T.&P. Sur. ..... Location.

LOVING COUNTY

Eppenauer et al's No. 2 Allen, 2,310 ft. from NE and 330 ft. from NW Sec. 90, Blk. 1, W.&N.W. Sur. ..... Drlg. 3,750 ft.

Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S Sec. 46, Blk. 53, T.&P. Sur. ..... Spud 50 ft.

Fabre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW Sec. 79, Blk. 33, H.&T.C. Sur. ..... Underreaming 1,335 ft.

Henshaw et al's No. 2 Reagan & McElvain, 1,650 ft. from SW and 990 ft. from SE Sec. 84, Blk. 7, W.&N.W. Sur. ..... Rig.

Hoffman et al's No. 1 Ramsey et al, 330 ft. NE and SE Sec. 83, Blk. 1, W.&N.W. Sur. ..... Drlg. 2,200 ft.

Hoffman et al's No. 2 Ramsey et al, 2,310 ft. from NE and 330 ft. from SE Sec. 83 ..... Rig.

Irwin and others' No. 1 Auld, 1,825 ft. from NE and 1,298 ft. from NW Sec. 67, Blk. 1, W.&N.W. Sur. .... Rig up.

Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Shut down 4,050 ft.

Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W Sec. 91, Blk. 1, W.&N.W. Sur. ..... Rigged up and shut down.

Lockhart's No. 1 Bell, 1,721 ft. from NE and 410 ft. from SE Sec. 91, Blk. 1, W.&N.W. Sur. ..... Rigging up.

Lockhart & Co.'s No. 2 Hubbard, 1,650 ft. from NE line, 330 ft. NW line of Sec. 33, H.&T.C. Sur. ..... Rigged up and shut down.

Richmond Drlg. Co.'s No. 1 Russell, 990 ft. from NE and 330 ft. from NW Sec. 80, Blk. 31, W.&N.W. Sur.. Moving in.

Rush et al's No. 1 Wheat, 330 ft. from NW and SW Sec. 77, Blk. 1, W.&N.W. Sur. ..... Cellar.

Slagel Drlg. Co.'s No. 1 Cartwright et al, 2,310 ft. from S and 990 ft. from W Sec. 1, Blk. 57, Twp. 1, T.&P. Sur. ..... Shut down 2,914 ft.

W. A. Suddreth et al's No. 1 Capitola Pool, 2,970 ft. from NE and 990 ft. from NW Sec. 73, Blk. 33, H.&T.C. Sur. ..... Location.

Tennant et al's No. 1 Martin, 990 ft. from NW and SW Sec. 66, Blk. 1, W.&N.W. Sur. ..... Rig.

California Co.'s No. 2 Allen, 2,310 ft. from SE and SW lines, Sec. 90, Blk. 1, W.&N.W. Sur. ..... Cem. 7-in. casing 4,150 ft.

California Co.'s No. 3 Allen, 2,191 ft. from NW and 2,182 ft. from SW Sec. 90, Blk. 1, W.&N.W. Sur. ..... Cem. 13⅜-in. casing 714 ft.

California Co.'s No. 4 Allen, 3,121 ft. from NW and 3,113 ft. from SW Sec. 90, Blk. 1 ..... Bldg. rig.

West Texas Pet. Corp.'s No. 1 Salsbury, 930 ft. from NW and SW Sec. 89, Blk. 1, W.&N.W. Sur. ..... Drlg. 3,725 ft.

MENARD COUNTY

Priest's No. 1 Sorrel, 1,000 ft. from E and 200 ft. from S cor. Sec. 132, E.L.R.R. Sur. ..... Shut down 2,655 ft.

Voss & Bryan and others' No. 1 F. Bredenberger, 600 ft. from N and 1,000 ft. from W Sec. 455, E. Henkel Sur. ..... Shut down 650 ft.

PECOS COUNTY

Cardinal Oil Co.'s No. 1 White & Baker, 990 ft. from N and 990 ft. from E Sec. 47, Blk. 194, T.C.&S.F. Sur. ..... Drlg. 1,235 ft.

Culberson Bros.' No. 1 Tippett (Humble), 150 ft. S and 842 ft. E of C Sec. 40, Blk. 194, G.C.&S.F. Sur. ..... Drlg. 126 ft.

Dittman's No. 1 Jackson, 2,310 ft. from NE and 330 ft. from NW Sec. 28, Blk. 3, H.&T.C. Sur. ..... Shut down 1,596 ft.

Hagen et al's No. 1 Shearer, 660 ft. from SE and 660 ft. from SW Sec. 45, Blk. 10, H.&G.N. Sur. ..... Rig up.

Magnolia Pet. Co.'s No. 1 Eaton, 2,310 ft. from SW and 330 ft. from NW Sec. 35, Blk. 3, H.&T.C. Sur. ..... Shut down 1,618 ft.; show oil 1,595-1,618 ft.

McCurdy & Brown's No. 2 Tippett, 150 ft. from N and W of SE Sec. 40, Blk. 104, G.C.&S.F. Sur. ..... Location.

McCarty Oil Co.'s No. 3 Gray, 700 ft. from N and 2,260 ft. from W Sec. 591, G.C.&S.F. Sur. ..... Shut down 1,437 ft.

J. R. Miller et al's No. 1 Bennett, 359 ft. W of CWL Sec. 1, Blk. 119, G.C.&S.F. Sur. ..... Shut down 2,283 ft.

Penn Oil Co. et al's No. 1 Alvis, 2,358 ft. from S and 1,327 ft. from W Sec. 155, Blk. 3, T.&P. Sur. ..... Drlg. 2,615 ft.

Perren Oil Co.'s No. 2 Eaton, S of E Sec. 27, Blk. 3, H.&T.C. Sur. ..... Shut down 1,765 ft.

Pure Oil Co.'s No. 1 Harrison, 2,310 ft. from N and 330 ft. from W of Sec. 203,, Blk. 3, T.&P. Sur. ..... Shut down 5,000 ft.

Riser & White's No. 1 Riser, 2,297 ft. from S and 997 ft. from E of Sec. 24, Blk. 12, H.&G.N. Sur. ..... Shut down 500 ft.

California Co. et al's No. 1 Thomas, 990 ft. from NW and SW Sec. 31, Blk. 34, H.&T.C. Sur. ..... Location.

Whitaker et al's No. 1 Mary Devlin, 150 ft. from N and 150 ft. from E Sec. 69, F. Hernandes Sur. ..... Rigging up.

REAGAN COUNTY

Big Lake Oil Co.'s No. 6-C University, 1,120 ft. S and 1,100 ft. from W Sec. 25, Blk. 9 ..... Location.

REEVES COUNTY

R. T. Hansford's No. 1 Williams, 150 ft. from S and W Sec. 17, Blk. 6, H.&G.N. Sur. ..... Shut down 280 ft.

Salsbury & Gregory's No. 1 Young Bell, 1,170 ft. from N and 330 ft. from NW line, Sec. 34, Blk. 7, H.&L.N. Sur. ..... Temporarily abandoned.

Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. ... Cleaning out 4,415 ft.

California Co.'s No. 2 Kloh & Rumsey, 990 ft. from S and 1,520 ft. from E Sec. 11, Blk. 74, Twp. 4, T.&P. Sur. ..... Drlg. 1,525 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 419 ..... Shut down 2,175 ft.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. ..... Underreaming 1,640 ft.

Teas & Gant's No. 1 Allison, 1,320 ft. N and E of SW cor. Sec. 37, Blk. K, G.H.&S.A. Sur. ..... Shut down 5,006 ft.; contract depth.

Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 17, Blk. LL, T.C. Sur. ..... Running 10¾-in. casing 1,215 ft.

George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W. G.H.&S.A. Sur. ..... Shut down 5,027 ft.

SCURRY COUNTY

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ..... Fishing 5,002 ft.

Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W Sec. 68, Blk. 3, H.&G.N. Sur. ..... Spudded and shut down.

Seifert & Dibble's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur. ..... Drlg. 637 ft.

STERLING COUNTY

Beesley et al's No. 1 Foster, 2,940 ft. N and 300 ft. W of SW cor. Sec. 7, Blk. 22, H.&T.C. Sur., but in Sec. 16, Blk. 34, Twp. 4s, T.&P. Sur. ..... Drlg. 637 ft.

TAYLOR COUNTY

John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor. Sec. 46, Lunatic Asylum Land ..... Drlg. 6,320 ft.

Sanger et al's No. 1 City of Abilene, 330 ft. from S and 1,400 ft. from E of Sec. 66, Blind Asylum Land ..... Shut down 2,785 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T. Sur. ..... Shut down 2,669 ft.

Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ..... Shut down 3,150 ft.

Miller Bros.' No. 1 Allison & Burke, C NW cor. Sec. 10, Blk. 176, T.&P. Sur. ..... Shut down 120 ft.

Mrs. J. B. McPhees' No. 1 Sam Belt, C Sec. 16, Blk. D-7, E.L. Sur. ..... Shut down 880 ft.; moved off machine.

Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S Sec. 26, Blk. 161, G.C.&S.F. Sur... Drlg. 6,082 ft.

Woodley & Jones' No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. ..... Drlg. 912 ft.

TOM GREEN COUNTY

Belding & Dutton's No. 1 Norsworthy, 2,640 ft. from S and 587 ft. from E of John McNeese Sur. ..... Shut down 760 ft.; show oil and gas 725 ft.

Fitzgerald & Taliaferro's No. 1 Bennett, C SW Sec. 1,628, E. H. Dinger Sur. ..... Plugged back to 2,405 ft. to straighten hole; shut down 2,447 ft.

Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur. ... Shut down 1,994 ft.

Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 ..... Shut down 200 ft.

UPTON COUNTY

Duffey and others' No. 1 McClintic, 990 ft. from N and 330 ft. from E C.C.S.D.&R.G.N.G. Sur. ..... Drlg. 1,310 ft.

Mintex Oil Co.'s No. 1 Lane, 2,310 ft. from N and 1,650 ft. from W Sec. 36, Blk. 1, M.-K.-T. Sur. ..... Running 12¼-in. casing 445 ft.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... Shut down 5,360 ft.

O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Waiting for cement to set 6,770 ft.

WARD COUNTY

Bradford et al's No. 1 Carson, 990 ft. from NE and SE Sec. 26, Blk. 5, H.&T.C. Sur. ..... Shut down 775 ft.

Beckley and others' No. 1 Johnson, 4,140 ft. from NE and 990 ft. from SE Sec. 3, Blk. 32, H.&T.C. Sur. .... Drlg. 410 ft.

Buster Black's No. 1 Hall & Roberts, 990 ft. from NE and 1,650 ft. from NW Sec. 17, Blk. 34, H.&T.C. Sur.. Moving in.

Clyde Bradford's No. 1 Hardinage and Welsor, 330 ft. from SE and 330 ft. from SW, H.&T.C. Sur. ..... Spud.

Chester & Smith's No. 1 Booger, 1,200 ft. from SE and 150 ft. from SW Sec. 11, Blk. 5, H.&T.C. Sur. ..... Drlg. 1,650 ft.

Central Oil & Gas Co.'s No. 1 Barrow, 330 ft. from NW and 1,263 ft. from SW Sec. 55, J. W. Jackson Sur. ..... Rigging up.

Gibson & Johnson's No. 1 Johnson, 4,140 ft. from SE and 990 ft. from NE Sec. 10, Blk. 32, H.&T.C. Sur. ... Drlg. 430 ft.

Gulf Prod. Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW Sec. 18, Blk. 5, H.&T.C. Sur. ... Show gas 1,960-70 ft.; filling up with sulphur water 2,520-77 ft.; salt water 2,515 ft.; plugged back to 2,477 ft.

Hankinson et al's No. 1 Emery, 3,090 ft. from SE and 510 ft. from SW Sec. 26, Blk. 5, H.&T.C. Sur. ..... Spudding.

Magnolia Pet. Co.'s No. 1 Sealy (Atlantic), 2,130 ft. from S and 1,650 ft. from E Sec. 45, Blk. F, G.M.M.B.&A. Sur. ..... Fishing 1,915 ft.

R. F. Owens' No. 1 Johnson, 100 ft. from NE and 1,100 ft. from SE of Sec. 8, Blk. 33, H.&T.C. Sur. ..... Shut down 2,800 ft.

Peck and others' No. 1 Merrett, 3,166 ft. from NE and 2,948 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur. ..... Shut down 75 ft.

Reckford & Ferglarr's No. 1 Booger, 4,051 ft. from NE and 1,983 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur... Drlg. 1,535 ft.

Shipley et al's No. 5 Hayslett, 2,490 ft. from SE and 1,980 ft. from SW Sec. 17, Blk. 5, H.&T.C. Sur. ..... Shut down 2,520 ft.

Simms Oil Co.'s No. 1 Himmel, 330 ft. from NE and 2,310 ft. from SE Sec. 30, Blk. B-29, P.S.L. Sur. ..... Location.

California Co. et al's No. 1 Lanham, 990 ft. from NE and SE Sec. 35, Blk. 34, H.&T.C. Sur. ..... Building rig.

California Co.'s No. 1 Gordon, 330 ft. from NE and SE Sec. 6, Blk. 34, H.&T.C. Sur. ..... Moving in spudder; total depth 2,200 ft.

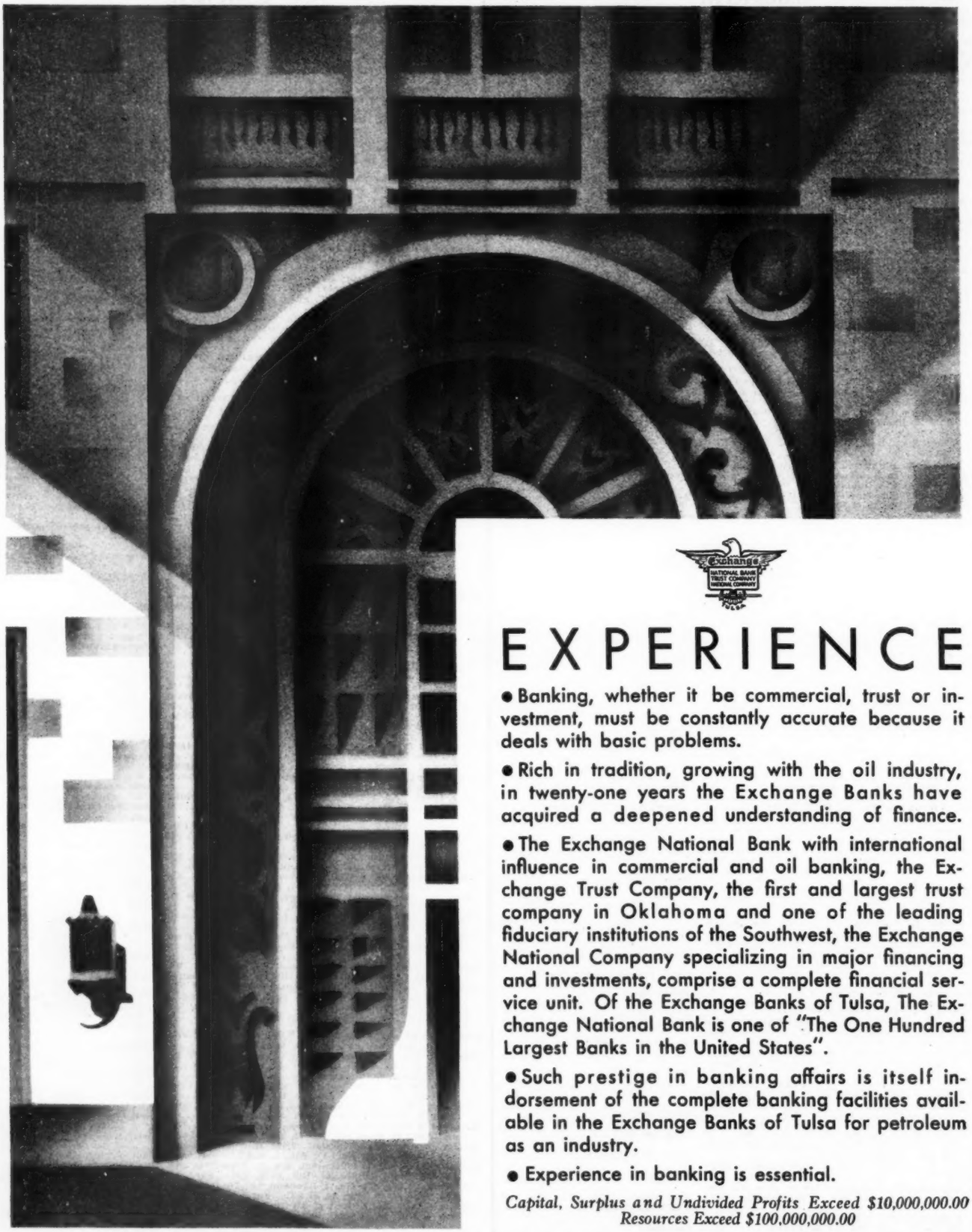
Shipley et al's No. 1 Monroe, 330 ft. SE SW Sec. 3, Blk. 1 ..... Shut down 3,785 ft.

WINKLER COUNTY

Magnolia Pet. Co.'s No. 1 Walton, 2,310 ft. from N and W Sec. 16, Blk. 77, P.S.L. Sur. ..... Top pay 3,140 ft.; flowing about 55 bbls. per day.

Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor. Sec. 2, Blk. B-5 ..... Shut down 4,640 ft.

COMPLETE BANKING SERVICE



EXPERIENCE

- Banking, whether it be commercial, trust or investment, must be constantly accurate because it deals with basic problems.
- Rich in tradition, growing with the oil industry, in twenty-one years the Exchange Banks have acquired a deepened understanding of finance.
- The Exchange National Bank with international influence in commercial and oil banking, the Exchange Trust Company, the first and largest trust company in Oklahoma and one of the leading fiduciary institutions of the Southwest, the Exchange National Company specializing in major financing and investments, comprise a complete financial service unit. Of the Exchange Banks of Tulsa, The Exchange National Bank is one of "The One Hundred Largest Banks in the United States".
- Such prestige in banking affairs is itself indorsement of the complete banking facilities available in the Exchange Banks of Tulsa for petroleum as an industry.
- Experience in banking is essential.

Capital, Surplus and Undivided Profits Exceed $10,000,000.00
Resources Exceed $100,000,000.00

EXCHANGE BANKS OF TULSA

The Exchange National Bank ❖ Exchange Trust Company ❖ Exchange National Company

SOUTHWEST TEXAS PROVEN AREAS

(Continued from Page 42)

PETTUS AREA—BEE COUNTY

J. L. Mauldin's No. 1 fee, 1,300 ft. N of S line, 150 ft. E of Medio Creek, Kerr Sur. ....T. D. 3,864 ft.; running csg.
Houston Oil Co.'s No. 1, Blk. 23 ....T. D. 3,911 ft.; to be deepened.
Houston Oil Co.'s No. 1, Blk. 33 ....T. D. 3,914 ft.; to be deepened.
United Prod. Co.'s No. 32 Ray, G. Habbermacher Sur.....T. D. 3,925 ft.; drlg.
United Prod. Co.'s No. 33 Ray ....Rigging up.
United Prod. Co.'s No. 35 Ray, 1,100 ft. east of No. 34, T. Hanson Sur. ....T. D. 3,950 ft.; drlg.
United Production's No. 36 Ray, Thomas Hanson Sur.....T. D. 1,000 ft.; drlg.

SLICK POOL—GOLIAD COUNTY

Slick estate's No. 1 Riedel, W. C. Brown Sur., 1,830 ft. S of No. 1 Poetter ....T. D. 2,000 ft.; drlg.

LASATER POOL—BOOKS COUNTY

Houston Oil Co.'s No. 3 Wormser, Maguella Sur. ....T. D. 4,315 ft.; drlg.

CARTWRIGHT POOL—LIVE OAK COUNTY

Houston Oil Co.'s No. 3 B. L. and C. C. ....T. D. 5,576 ft.; abnd.
Houston Oil Co.'s No. 3 Dunning, M. B. Kilvin Sur. ....Moving in rig.
Houston Oil Co.'s No. 4 B. L. and C. C. ....T. D. 5,020 ft.; testing.

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities Co.'s No. 6 Chittim, Sec. 116, Blk. 7, I.&G.N. Sur. ....T. D. 4,675 ft.; drlg.
Texas Gas Utilities' No. 7 Chittim, I.&G.N. Sur. ....T. D. 3,130 ft.; shut down.

AGUA DULCE FIELD—NUECES COUNTY

Houston Oil Co.'s No. 1-B Ollie Purl ....T. D. 5,615 ft.; drlg.

SAXET FIELD—NUECES COUNTY

O. C. Best et al's No. 1 Boory ....T. D. 4,070 ft.; setting csg.
Houston Oil Co.'s (Andy Bowen) No. 1 Prieur, H. B. Sheppard Sur. ....T. D. 1,465 ft.; waiting for csg.
Houston Oil Co.'s No. 2 R. Morgan ....T. D. 4,095 ft.; set csg.
Moody-Seagraves' No. 1 Sedgwick, . Dunn Sur. ....T. D. 4,097 ft.; set csg.
W. L. Pearson Properties' No. 1 Dunn, 300 ft. S of Bay...Shut down 2,600 ft.
Saxet Oil Co.'s No. 7 Dunn ....T. D. 4,296 ft.; drlg. plugs.

WHITE POINT FIELD—SAN PATRICIO COUNTY

United Production Co.'s No. 3 Cage ....T. D. 1,915 ft.; drlg.
Saxet Oil Co.'s No. 4 White Point ....T. D. 3,000 ft.; drlg.

PRYOR FIELD—ZAVALA COUNTY

Texas Gas Utilities' No. 4 Pryor, 1,000 ft. NW of No. 3 Pryor ....Location.

LAREDO DISTRICT

SCHOOLFIELD-O'BYRNE POOL—DUVAL COUNTY

Magnolia Pet Corp.'s No. 2 Wilson, Sur. 134 ....T. D. 2,372 ft.; setting csg.
Frasher-Breeding et al's No. 2 Bishop Cattle Co., Sur. No. 135 ....T. D. 800 ft.; drlg.

RANDADO POOL—JIM HOGG COUNTY

J. W. Pippin's No. 1 Hinnant, 150 ft. each way from SW cor., Blk. 11, Sur. 147 ....Derrick.

KOHLER POOL—DUVAL COUNTY

Humble Oil & Refining Co.'s No. 50 Kohler, 2,805 ft. from S line, 165 ft. from W line of Sur. 164 ....T. D. 5,595 ft.; repairing rig.

S. R. C. POOL—DUVAL COUNTY

S. R. C. and Vacuum's No. 4, Duval County Ranch Lands Sur. 293 ....Drlg. 1,734 ft.; comp. 600 bbls.

COLE POOL—WEBB COUNTY

O. W. Killam's No. 4 Cuellar ....T. D. 2,728 ft.; drlg.
South Texas Prod. Co.'s No. 4 Benavides, M. Arispie Sur. ....T. D. 1,704 ft.; set csg.

COLE POOL—DUVAL COUNTY

Southern Oil Co.'s No. 2 Kings-Harper, 1,794 ft. E line, 729 ft. N line of Sur. 323 ....Location.

REISER POOL—WEBB COUNTY

O. W. Killam's No. 1 Johnson, Sur. 1,617 ....T. D. 2,546 ft.; drlg.

CAROLINA-TEXAS POOL—WEBB COUNTY

George S. Marshall's No. 1 C. W. Webster, 810 ft. from S line, 150 ft. from W line, Sur. 684 ....T. D. 4,050 ft.; drlg.
Carolina-Texas Oil & Gas Co.'s No. 9 Barnsley Sur. No. 268 ....Spudded.

CHARCO REDONDO POOL—ZAPATA COUNTY

Midwest Public Utilities' No. 1 Zarza, 450 ft. SW line, 450 ft. SE line, Blk. 33, Pedernal grant ....T. D. 1,598 ft.; standing.

JENNINGS-MUCKELROY POOL—ZAPATA COUNTY

Allied Oil & Gas Co.'s No. 12 Guiterrez, 750 ft. from NE line, 3,663 ft. from SE line, Share 4, Fansler Partition, Comitas grant ....T. D. 100 ft.; standing.
K. & P. Oil Co.'s No. 4 Bustamente, Comitas grant ....T. D. 1,925 ft.; drlg.
P. H. Meyers' No. 1 Trevino, Sur. 412 ....T. D. 1,320 ft.; coring sand.
J. I. Newton's No. 3 Trevino, Blk. 7, Sur. No. 66 ....Location.
S. R. C. Oil Co.'s No. 5-D Montemayor ....T. D. 1,492 ft.; drlg.
S. T. Phelps (Blankenship) No. 2 Garza, 425 ft. W line, 425 ft. E line, Blk. 2, Sur. 413 ....T. D. 1,956 ft.; abnd.

CUELLAR POOL—ZAPATA COUNTY

O. W. Killam's No. 40-C Cuellar, Sur. No. 378 ....Derrick.

MIRANDO VALLEY POOL—ZAPATA COUNTY

O. W. Killam's No. 4 Kilam, Blk. 11, Sur. No. 182 ....T. D. 2,946 ft.; abnd.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 42)

The Texas Company's No. 1 Allen, San Antonio grant ....Location.

BEE COUNTY

Hurlbut et al's No. 1 Mrs. D. Chestnut ....T. D. 5,010 ft.; shut down.
Alexander and others' No. 1 McFail, 3 miles south Skidmore ....T. D. 280 ft.; drlg.
Hicks and Patton's No. 1 Billingsley, B. Q. Hadley Sur., 1½ miles N Grayburg's No. 1-A Kimball ....T. D. 3,200 ft.; drlg.
Catlell and O'Neill's No. 1 Miller, Ronald Hotchkiss Sur. ....T. D. 1,150 ft.; drlg.
Mauldin et al's No. 1 Kimball, 300 ft. S Grayburg's No. 1-A Kimball, S. Winship Sur. ....T. D. 3,544 ft.; drill stem test showed oil and gas.
E. S. Price's No. 1 Weiss, 200 ft. each way out of NW cor. of B.&B. Sur. ....T. D. 4,423 ft.; preparing to swab.
E. S. Price's No. 2 Weiss, 900 ft. due SW of No. 1 Weiss, B.&B. Sur. ....T. D. 4,546 ft.; testing.
E. S. Price's No. 3 Weiss, 900 ft. due NE of No. 1 Weiss..Location.
Cosden Oil Co.'s No. 1 Stoltzfus, 2,310 ft. S and E lines of Sec. 14, Rangley Subd. of C. Miller ranch, Uranga Sur. ....T. D. 4,500 ft.; shut down.
Humble and Hurlbut et al's No. 1 J. C. Wood, 150 ft. from NW line, 1,144 ft. from SW line of P. T. Irrigation Co. ....T. D. 5,077 ft.; standing.
The Texas Company's No. 1 McCampbell, 150 ft. from N and E lines of 161-ac. tract, R. Pena Sur. ....Location.

BEXAR COUNTY

Balcones Oil Corp.'s No. 1 Jackel, Alexander Bailey Sur. No. 184 ....T. D. 2,510 ft.; standing.
Kaye and Uhl's No. 1 Rhode, C. Texada Sur. No. 183 ....T. D. 665 ft.; shut down.
Long and Craig's No. 1 Sandemer ....Location.
McElroy-Hall and Croach's No. 1 Sweeney, 450 ft. NW line, 700 ft. W line of tract, F. R. Hernandez Sur. ....Waiting on cement.
J. M. Russell's No. 1 F. L. Price, 1,500 ft. to N line, 660 ft. W of tract in Angel Navarro Sur. ....T. D. 1,024 ft. in chalk; shut down for csg.
Snyder, Reeves et al's No. 2 Glasscock, 12 miles NE of San Antonio ....T. D. 802 ft.; shut down.
Russell & Moore's No. 3 Mills, Angel Navarro Sur., No. 5 ....T. D. 936 ft.; drlg. shale.
Ueckert et al's No. 1 Palfrey, 1,000 ft. S and W lines of farm ....T. D. 1,809 ft.; coring.
S. M. Terrell et al's No. 1 A. Beadom, 1,100 ft. from E line, 12,000 ft. from N line of John Barber Sur....Location.
F. W. Tong's No. 1 Willie Sandemer, 150 ft. from NE and SE lines of the N 20 acres of Willie Sandemer 400-ac. tract, Juan Montez Sur. ....T. D. 1,260 ft.; shut down.
Bowman and Waldrop's No. 1 Ridder, 1,000 ft. from S and W lines of 688-ac. tract, J. M. Sur. ....T. D. 2,000 ft.; plugged back to 600 ft.; will put on pump.
Waggoner and Stieren's No. 1 S.A.S.I.F., G. Najar Sur. ....T. D. 1,145 ft.; reaming.

CALDWELL COUNTY

Callihan et al's No. 3 W. H. Callihan, 70 ft. N, 65° E of No. 2 ....T. D. 2,525 ft.; shut down.
Mills et al's No. 2 McMahon, 50 ft. E of No. 1 ....Rigging up.
Neuhaus and others' No. 1 Moore, W. Clinton Sur. ....T. D. 1,800 ft.; drlg.

COMAL COUNTY

Caldwell & Lanier's No. 1 T. J. Byler, 175 varas from W line, 370 varas from N line of 320-ac. tract in the H.E.&W.T. No. 5,894 Sur. ....T. D. 718 ft.; drlg.

DEWITT COUNTY

H. T. Roe's No. 1 Leinhardt ....T. D. 2,170 ft.; shut down.
Gibson and Sturm's No. 1 Clark, Dolores Alderete Sur. ..Location.

DUVAL COUNTY

O'Byrne et al's No. 1 Well, B.S.&F. Sur. No. 568 ....T. D. 1,620 ft.; drlg.

EDWARDS COUNTY

Phillips Pet. Corp.'s No. 2 A. G. Holman, 320 ft. from N and E lines of SE of tract, C.C.S.D.&N.G.R.G. Sur. No. 25 ....T. D. 7,960 ft.; drlg.
James Dalgish's No. 2 Peterson, 850 ft. N line, 1,100 ft. W line of Sec. 82, Blk. E in the H.E.&W.T. Sur...Location.

FAYETTE COUNTY

Elam & Reynolds' No. 1 Florence, M. Muldoon Sur. No. 13 ....T. D. 1,040 ft.; shut down.

FRIO COUNTY

A. H. Wray's No. 1 Burns estate, 700 ft. N, 330 ft. E of C Sec. 123, Antone Hupzor ....T. D. 3,708 ft.; running csg.

GOLIAD COUNTY

A. G. Riemenschneider's No. 1 A. T. Fromme, 275 ft. from N line, 912 ft. W line of 300-ac. tract, P. Dexeter Sur. ....T. D. 2,330 ft.; shut down.
Gibson Oil Co.'s No. 1 Cyrus Parks, 3,000 ft. S and 2,500 ft. E of NW cor. of Parks ranch, Ferguson Sur. ....T. D. 5,267 ft.; standing.

GONZALES COUNTY

Acme Oil & Royalty Corp.'s No. 1 H. K. Weber, 2,525 ft. from NW line, 2,250 ft. from SW line, Wright Sur. ....T. D. 2,560 ft.; shut down.
Linden Pet. Co.'s No. 1 Cowley, James Smith Sur. ....T. D. 3,900 ft.; drlg.
Weal Oil Co.'s No. 1 Martin, 360 ft. SE line and SW line of tract, Thomas Moore Sur. ....T. D. 4,150 ft.; drlg.

GUADALUPE COUNTY

O. K. Emerson's No. 1 C. A. Phillips, center of 80-ac. tract, Velda Sur. ....Rigging up.
San Antonio Oil & Royalty Co.'s No. 1 Dilrell, H. and T. C. Sur. ....Location.
Schleyer, Atherton and Armstrong's No. 1 Ogletree, Robert Smith Sur. ....Derrick.

HAYS COUNTY

J. C. Jones et al's No. 1 Byder, John Ingram Sur. ....T. D. 785 ft.; shut down.

JIM HOGG COUNTY

Magnolia Pet. Co.'s No. 1 Cuellar, Sur. No. 575 ....T. D. 2,137 ft.; coring.
Peterman and Minahan's No. 1 Palacios, Sur. No. 231 ...Rigging up.
J. D. Pulliam's No. 1 Jones, 1,020 ft. W line, 1,020 ft. S line, Share 5-A, Hinojosa Sur. ....T. D. 2,888 ft.; standing.

JIM WELLS COUNTY

Carsil Oil & Gas Co.'s No. 1 McGill, D. Baldwin Sur. ....T. D. 2,690 ft.; running csg.
R. H. Ewell's No. 1 Doering, Blk. 6, Seefield Subd. ....T. D. 2,900 ft.; drlg.
Gulf Prod. Co.'s No. 1 Shaeffer, J. Pointevent Sur. No. 1..T. D. 1,800 ft.; drlg.
Prairie Lee Prod. Co.'s No. 1 Oppenheimer ....T. D. 1,000 ft.; shut down.
Smith Clark Co.'s No. 1 Cuero Cattle Co. ....Location.
Stewart and Blair's (E. W. Ogden) No. 2 Farris ....T. D. 2,123 ft.; setting csg.

KARNES COUNTY

J. F. Morrissey et al's No. 1 Rigsdale, 660 ft. SW of C of NE line of 170-ac. farm in the McCoull Sur. ....T. D. 3,000 ft.; drlg.
A. Edmiston's No. 1 Cochran, 150 ft. from S line, 500 ft. from E line of tract, D. B. McConnell Sur. ....T. D. 1,010 ft.; standing.
Karnes County Development Co.'s No. 1 Hubbard, 3 miles W of Kennedy ....Rigging up.

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur. ....T. D. 1,010 ft.; shut down.
Sitton et al's No. 1 Garvin, C of NE of D. L. Richardson Sur., in the D. L. Richardson Sur., 1 mile NE from Kendalia ....T. D. 1,165 ft.; shut down.
Dixon Oil Co.'s No. 1 Ottmer Behr, W of H.T.&B.R.R. Sur., 3½ miles SE from Sisterdale ....T. D. 2,600 ft.; fishing.
P. B. Sterling's No. 1 R. J. McCrocklin, 1,350 ft. from N line, 250 ft. from W line of the B. G. Owens Sur., 4 miles W from Kendalia ....T. D. 1,600 ft.; shut down.
R. M. Perkins' No. 1 J. Lawhorn, Sec. 10, 2,475 ft. E line, 1,488 ft. S line ....T. D. 706 ft.; standing.
Permian Oil Co.'s No. 1 Taylor, Sec. 18, G.B.&C. Sur. ....T. D. 100 ft.; shut down.

KERR COUNTY

Evans and Gant's No. 1 Selker-Mears, C.C.S.D.&R.G. N.G. Sur. No. 1,605 ....T. D. 540 ft.; drlg.
Evans and Gant's No. 1 E. Young, A. E. Burge Sur. No. 28 ....Moving in rig.

KINNEY COUNTY

Marion Oil Co.'s No. 2 Jim Clamp ....T. D. 1,389 ft.; standing.
Magnolia Petroleum's No. 1 Wardlaw, Meliton Valdez grant ....T. D. 5,250 ft.; shut down.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 7,700 ft. N and W lines of F. Lotta Sur. ....T. D. 850 ft.; standing.
Kamon et al's No. 1 Hodges ....T. D. 2,505 ft.; shut down; hole full water.

LASALLE COUNTY

Fred W. Vales' No. 1 Coleman, 200 ft. from S and E lines of SW Sec. 514, B.S.&F. Sur. ....T. D. 40 ft.; standing.

LAVACA COUNTY

Newton Oil Co.'s No. 1 Reeves, cor. of S line of Reeves tract, John Huesser Sur. ....T. D. 3,340 ft.; fishing.

LIVE OAK COUNTY

Jacob, Buzzini & Pickett, Inc.'s No. 1 C. E. Kay in the Bridget Fadden Sur., 3 miles E from George West ...T. D. 4,200 ft.; drlg.
Houston Oil Co.'s No. 1 D. W. Snyder, 630 ft. from S line, 150 ft. from E line of Snyder tract, T. E. Garner Sur. ....T. D. 5,286 ft.; standing.
Houston Oil Co.'s No. 1-A Parr, John McMullen grant ..T. D. 574 ft.; drlg.
Illinois Exploration Synd.'s No. 1 Reeves-Brown, 1,300 ft. S of Sellers tract, 1,800 ft. E of Ry. ....T. D. 2,145 ft.; cleaning out.
Phillips Pet. Corp.'s No. 1 Goebel, Refugio County School Land Sur. ....T. D. 3,350 ft.; abnd.
Southern Exploration Co.'s No. 1 Ponder, B.S.&F. Sur., in eastern Live Oak ....T. D. 4,125 ft.; twisted off.
Sid Keoughan's No. 1 C. E. Terrell, 600 ft. from N line, 1,000 ft. from E line, Dan O'Boyle Sur. ....T. D. 2,840 ft.; shut down.

LEE COUNTY

A. H. Wheeler and associates' No. 1 fee, Blk. 47, H. Donohue Sur. ....T. D. 1,998 ft.; moving in new boiler.
C. B. Polk et al's No. 1 Stoltz, Hiram Donohue Sur. ....T. D. 1,241 ft.; drlg.

McLENNAN COUNTY

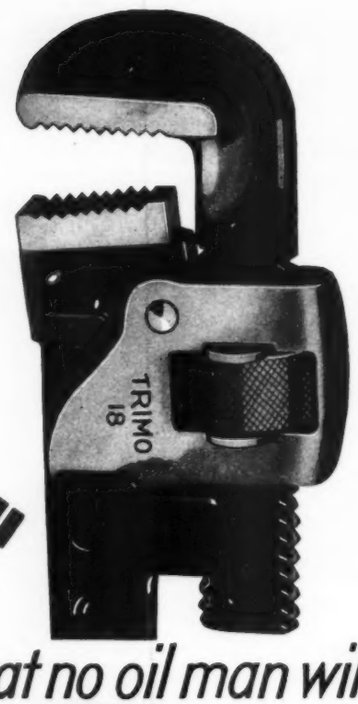
C. E. Groone et al's No. 1 League ....T. D. 1,230 ft.; shut down.

McMULLEN COUNTY

Mogul Pet. Co.'s No. 1 Martin, 150 ft. NW line, 150 ft to SW line of E. Melon No. 212 Sur. ....T. D. 632 ft.; standing.
Neuhaus and others' No. 1 J. O. Massey, Sur. No. 472 ...Spudded.
Sheree, Brodie and Emick's No. 1 Shiner, Henry Brewer Sur. ....T. D. 1,200 ft.; drlg.

MEDINA COUNTY

J. H. Hickey's No. 1 Odon, H. Castro Sur. No. 175 ....T. D. 820 ft.; shut down.
Donaldson Oil & Gas Co.'s No. 2 Adams ....Derrick.
C. H. Florian et al's No. 1 Henry Meyer ....T. D. 200 ft.; standing.



"All Steel"

Two words that no oil man will argue about

TRIMO

THERE is no real argument about what those two words, All Steel, mean in connection with TRIMO wrenches. They are simply the shortest possible way of explaining the remarkable safety and strength of the oil man's favorite wrench.

Safety and strength are a certainty in every part of the TRIMO wrench. Handle, jaws, frame — there are no weak spots to be favored, no doubtful parts to suspect. TRIMO is steel throughout and therefore safe throughout. "All Steel" settles the argument.

All Steel TRIMO Pipe Wrench
Handle Drop Forged not Cast

Made for nearly half a century by Trimont Mfg. Co., Roxbury, Boston, Mass., makers of TRIMO wrenches, tongs, vises and cutters.

National Oil Co.'s No. 1 Howard, 1,750 ft. E of W line, 1,854 ft. N of S line of survey in the John George Sur. No. 9, 10 miles S of Dunlay ..... Plugged back to 1,625 ft.; may make small well.
Caldwell et al's No. 1 L. W. Burrell ..... T. D. 518 ft.; standing.
M. Eskridge et al's No. 1 Medina Valley Irrigation ..... T. D. 1,390 ft.; shut down.
Pat Armstrong's No. 1 Crawford, 1,389 ft. N line, 2,559 ft. E line of survey, 487.6 miles W of Devine ..... T. D. 2,789 ft.; shut down.
Sunflower Oil Co.'s No. 1 Mofield, J. Brothag Sur. No. 532 ..... T. D. 1,212 ft.; standing.
Yancey Development Co.'s No. 1 Faseler Sur. No. 801 .... T. D. 90 ft.; drlg.

MILAM COUNTY

Rheubotham & Tate's No. 1 Johnson, 325 ft. from N line, 250 ft. from W line of 40-ac. tract, D. Robinson Sur. ..... T. D. 2,100 ft.; shut down.
Red Bank Oil Co.'s No. 1 Foster, A. G. Berry Sur. ..... Derrick.
Masters and Pomeroy's No. 1 Pluger, J. J. Acosta Sur. ... T. D. 1,136 ft.; shut down.
Kyser, Roberts & Dibble's No. 2 Ward ..... T. D. 2,933 ft.; drlg.
J. E. McKee et al's No. 1 Littleton, 150 ft. from N and 225 ft. from W lines of lease, C. Chevallier Sur. .... T. D. 510 ft.; shut down.
Peggie Brothers' No. 1 M. Reed ..... T. D. 650 ft.; shut down.

NUECES COUNTY

H. H. Weinert's No. 1 Mohle, 450 ft. from S line, 450 ft. from W line, Sec. 94, Bishop Subd., Palo Alto lands ..... T. D. 5,408 ft.; abnd.

REAL COUNTY

Evans & Sprinkle's No. 1 J. M. Auld, H.E.&W.T. Sur. No. 15 ..... T. D. 3,900 ft.; drlg.
McGinley Corp.'s No. 1 Haby, C of SW Sec. 175 ..... T. D. 1,390 ft.; cleaning out cavings at 1,170 ft.
Gant-Kilgore and Evans' No. 1 A. D. Auld, C.C.S.D.& R.G.N.G. Sur. No. 23 ..... T. D. 1,585 ft.; drlg.

STARR COUNTY

Los Olmos Oil Co.'s No. 2 Kelsey-Bass, Blk. 6, Porcion 77 ..... T. D. 881 ft.; drlg.
Kush and Duerkson's No. 1 Kelsey-Bass, Blk. 9, Porcion 75, Carmargo Sur. ..... T. D. 856 ft.; standing.
Menyard et al's No. 1 Sealbury, 150 ft. from E line, 6,550 ft. from N line, Share 5, Porcion 75, Jurisdiction of Carmargo ..... T. D. 349 ft.; set 8-in. csg.

SAN PATRICIO COUNTY

George B. Pickett's No. 1 Baldwin, 900 varas due E of Denton, 1,200 ft. S of the SE cor. of O'Neill Sur., Abstract 211 ..... T. D. 4,020 ft.; shut down.
Saxet Oil Co.'s No. 1 Carrol, 8 miles N of Gregory .... Derrick.

TRAVIS COUNTY

Fort Bend Oil Co.'s No. 1 Engleman, 450 ft. N line, 150 ft. W line of 108-ac. tract, J. H. Denson Sur..... T. D. 1,800 ft.; shut down.
F. W. Fuch's No. 1 Bailersted, A. Alexander Sur. ..... Derrick.
Franklin et al's No. 1 Wilson, A. Alexander Sur. ..... Derrick.
Waldron et al's No. 1 Cook, D. H. Minor Sur., 8 miles SW of Austin ..... T. D. 645 ft.; drlg. shale.
Taylor Refining Co.'s No. 1 W. Smith, L. Kimbro Sur. .. Rigging up.
Bohls and Wilson's No. 1 Norton, J. Cole Sur. ..... Derrick.

UVALDE COUNTY

Phantom Oil Co.'s No. 1 Claudt, Sec. 611 ..... T. D. 2,710 ft.; shut down.
Waldrop & Welch's No. 1 E. R. Edmonds, 1,750 ft. NW, 7,200 ft. W of Sec. 71, in the A. Gomez Sur., 8 miles S of Uvalde ..... T. D. 1,610 ft.; running csg.

WEBB COUNTY

Cole Pet. Co.'s No. 4 Benavides, Sur. No. 1,601 ..... Spudded.
Usher Carson et al's No. 3 Benavides, 150 ft. from S and W lines of Blk. 7, Sur. 1,613 ..... T. D. 1,578 ft.; abnd.

WILSON COUNTY

Stover and Wren's No. 1 John Ruess, 10,400 ft. from SW line, 2,300 ft. from NW line, O. A. Trevino Sur No. 19 ..... T. D. 1,100 ft.; shut down.

ZAPATA COUNTY

T. H. Ward's No. 1 Uribe, 150 ft. NW line, 150 ft. SW line, Blk. 8 Subd., Share 7, Partition No. 6, T. Uribe Partition of Jose V. Borrego Sur. ..... Rigging up.
Benson Oil Co.'s No. 1 S. Vela, west corner of Blk. 12, Sur. No. 259 ..... T. D. 630 ft.; drlg.
Bill Henry and others' No. 1 Gopher Trust Estate, Borrego grant ..... T. D. 950 ft.; drlg.
John Poppas Pool, Inc.'s No. 1 Flores, 2,977 ft. SE line, 6,000 ft. Rio Grande River, Porcion 35 ..... Rigged up.
B. F. Nixon's No. 1 A. Guiterrez, 170 ft. S line, 332 ft. E line, Lot 5, Blk. 8, Partition 10, Borrego grant .... T. D. 50 ft.; abnd.
Penny Prod. Co.'s No. 1 Juan V. Cuellar, Jr., et al, 175 ft. NE line, 175 ft. SE line Poppas Subd., Porcion 33 and 34, Blk. 1, Sur. 2 ..... T. D. 2,050 ft.; drlg.
National Oil Co.'s No. 1 Luther, 617 ft. NW line, 96 ft. NE line, Blk. 97, De Prom Subd., Porcion 6 ..... T. D. 600 ft.; drlg.
National Oil Co.'s No. 2 Adams, 150 ft. from NW line and SW line, Blk. 11, Borrego grant ..... T. D. 1,148 ft.; standing.
Mackenzie and Talmadge's No. 1 Trevino, 400 ft. SE line, 200 ft. NE line, Blk. 6, Sur. No. 4, Porcion 2 and 3 ..... T. D. 709 ft.; drlg.

ZAVALA COUNTY

Carl Cromwell's No. 1 Whitecotton, C of NW Sec. 1, A.P.&M. Sur. ..... Location.
F. W. Weigand's No. 1 Gates, 1,320 ft. from N line, 220 ft. from NE cor. Sur. No. 13 ..... T. D. 3,215 ft.; shut down.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 38)

Richland Operating Co.'s No. 1 Cooper, 600 ft. N, 600 ft. W, SE cor., Sec. 13-16-6 ..... Repairing rig 2,280 ft.
Southern Carbon Co.'s No. 1 J. O'Neal, 660 ft. N, 760 ft. E, SW cor., Sec. 36-17-5e ..... Location.
Southern Carbon Co.'s No. 2-B Thomason, 1,980 ft. S, 2,080 ft. W, NE cor., Sec. 23-16-6 ..... Cmtd. to shut off salt water 2,442 ft.
United Carbon Co.'s No. 2 Cooper, 660 ft. N, 3,551 ft. E, SW cor., Sec. 13-16-6 ..... Location.
United Carbon Co.'s No. 1 Lindow, 1,980 ft. S, 37 ft. E, NW cor., Sec. 15-16-6 ..... Drlg. 2,418 ft.

SABINE PARISH—ZWOLLE

Bradley Drlg. Co.'s No. 1 Newton, 600 ft. W, 600 ft. S, NE cor. NW SE, Sec. 25-8-12 ..... Dry and abd. 2,575 ft.
W. M. Coats' No. 2-A Sabine Lbr. Co., 330 ft. S and E, NW cor. NW SW, Sec. 1-7-12 ..... Drlg. plug 2,207 ft.
W. M. Coats' No. 3 Sabine Lbr. Co., SW cor. SW NW, Sec. 1-7-12 ..... 10-in. 103 ft; drlg. 760 ft.
O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor. SE NW, Sec. 30-8-12 ..... S.D. 90 ft.
Ab Jones et al's No. 1 Ferguson, 330 ft. N, 330 ft. W, SE cor. NE SW, Sec. 33-8-12 ..... S.D; W.O. 2,528 ft; S.O.
Jordon Drlg. Co.'s No. 1 La. Long Leaf Lbr. Co., 660 ft. N, 247 ft. W, SE cor. SW SE, Sec. 3-7-11 ..... Set 10-in. at 100 ft; drlg. 640 ft.
Lacy Prod. Co.'s No. 3 Cooper, NW cor. SW NE, Sec. 30-8-11 ..... Set 10-in. 78 ft; drlg. 400 ft.
Loring Oil Co.'s No. 16 Bowman-Hicks, approximately 1,000 ft. S, 330 ft. E, NW cor., Sec. 9-7-12 ..... Location abd.
Natural Gas Prod. Co.'s No. 1 Sabine Lbr. Co., NW cor. SW NE, Sec. 1-7-12 ..... Derrick.
Ohio Oil Co.'s No. 7 Bowman-Hicks, 250 ft. N, 1,370 ft. E, SW cor. NW NE, Sec. 2-7-12 ..... Bailing 2,342 ft.
Ohio Oil Co.'s No. 8 Bowman-Hicks, 330 ft. N, 330 ft. E, NW cor. NE, Sec. 2-7-12 ..... Derrick.
H. W. Perritt's No. 3 Bowman-Hicks, 244 ft. S, 122 ft. E, NW cor. SE SW, Sec. 2-7-12 ..... W.O.S.R; hole full fluid.
Triangle Pet. Co.'s No. 2 Sabine Lbr. Co., 330 ft. N and E, SW cor., Sec. 36-8-12 ..... Derrick.
J. C. Walton's No. 1 Sabine Lbr. Co., 300 ft. S, 300 ft. W, NE cor. NW, Sec. 11-7-12 ..... Dry; show oil; S.D. 2,327 ft.

WEBSTER PARISH—SAREPTA

Cassidy & Davis' No. 1 Nickerson, 300 ft. S, 300 ft. W, NE cor. SW, Sec. 29-23-10 ..... S.D. 150 ft.

ARKANSAS

OUACHITA COUNTY—SMACKOVER

L. H. Hamilton's No. 3 Doyle, 100 ft. E, 400 ft. N, SW cor. SE SE, Sec. 23-15-16 ..... Fishing 600 ft. 2½-in. tubing; T.D. 2,091 ft.

OUACHITA COUNTY—STEPHENS

J. D. Reynolds' No. 1 Grayson, Sec. 21-15-15 (Stephens Townsite) ..... 1,500 ft. fluid in hole; W.O.S.R. 2,197 ft.
Wesson & Bonner's No. 1 Wesson, 500 ft. W, 175 ft. N, SE cor. SW NW, Sec. 22-15-19 ..... Setting packer to cut off water flow 2,169 ft.

UNION COUNTY—CHAMPAGNOLLE

Ohio Oil Co.'s No. 3 Furlough, 408 ft. N, 192 ft. E, SW cor. NW NE, Sec. 12-17-14 ..... Drlg. 2,955 ft.
Ohio Oil Co.'s No. 2 Raulston, 330 ft. S, 330 ft. E, NW cor. NW SE, Sec. 12-17-14 ..... Derrick.
Ohio Oil Co.'s No. 5 R. Pumphrey, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 12-17-14 ..... Completed Mar 20, 175 bbls. 50% salt water.

UNION COUNTY—EL DORADO

Rice Drlg. Co.'s No. 1 Watley, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15 ..... S.D. funds; T.D. 2,186 ft.
Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15 ..... S.D; W.O. 2,608 ft.

UNION COUNTY—URBANA

Marine Oil Co.'s No. 1-E Thompson, 330 ft. N, 330 ft. W, SE cor. NW NE, Sec. 10-18-13 ..... Coring 3,542 ft.
Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13 ..... Location.
Marine Oil Co.'s No. 4-B Thompson, Sec. 10-18-13 ..... Set 10-in. at 311 ft; no check.

EAST TEXAS

HARRISON COUNTY

Calatex O. & G. Co.'s No. 6 Argus, 755 ft. N, 699 ft. W, Mile Post 27, in J. Womack Sur. ..... Location.

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 13 Louis Werner, 1,590 ft. S, 600 ft. W, SE cor. Carrie Steele tr., B. C. Jordan Sur. ..... Drlg. 3,804 ft.
Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur..... S.D. 2,600 ft.
Dillon & Bradham's (was W. G. Banks et al's) No. 1 C. O. Baldwin, 1,395 ft. W, 1,362 ft. S, NE cor. Baldwin 290 ac. in Hampton West Sur..... Washing to bottom 1,400 ft.
S. E. Bell et al's No. 1 Burnett Lbr. Co., C, S. B. Hendricks Sur. ..... S.D; W.O. 3,335 ft.
C. D. Neff et al's No. 6 Brumble, B. C. Jordan Sur..... Derrick.
Knox et al's No. 1 Dunham, Chas. Haley Sur..... S.D. 3,190 ft.
United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lease, in B. C. Jordan Sur.... Location.

MISSISSIPPI

HINDS COUNTY

E. B. Love et al's No. 1 Payne, Sec. 27-6-1e ..... Bailing; no results in chalk 2,527 ft.
Cleve Love et al's No. 2 Ridgeway-McGhee, SE cor. NW, Sec. 2-5-1e ..... Rigging up.
Love Pet. Co.'s No. 1 Maley, Sec. 15-5-1e ..... S.D. 2,498 ft; W.O.
Love Pet. Co.'s No. 2 Maley, 700 ft. E, 1,100 ft. S, NW cor. NE NW, Sec. 15-5-1e ..... Set 7-in. 2,458 ft; waiting on cmt.
Pirtle & Flint's No. 1 Payne, 450 ft. W, 50 ft. N, SE cor. SW SW, Sec. 27-6-1e ..... Coring chalk 2,546 ft.

RANKIN COUNTY

Miss. G. & F. Co.'s No. 1 Hanna, SW cor. SW NE, Sec. 14-5-1e ..... Derrick.
Pioneer O. & G. Co.'s No. 1 Ragland, NE cor. SW SW, Sec. 12-5-1e ..... Topped black shale 2,296 ft; set 6⅝-in. 2,370 ft.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 38)

CONCORDIA PARISH

Joe Marr et al's No. 1 Maxwell, C, Sec. 35-3n-8e..... S.D. 3,622 ft.
Fred Stovall's No. 1 Grasmere (no check), Sec. 23-8-10.. Drlg. 1,600 ft.
United Gas Public Service Corp.'s No. 3 Saunders, 2,497 ft. E, 3,883 ft. S, NE cor., Sec. 11-8-9, in Sec. 42..... 28,000,000 ft. gas; T.D. 1,436 ft.

DE SOTO PARISH

Dupree-Fountain's No. 1 J. M. Nabors, 250 ft. S, 200 ft. W, NE cor. NW, Sec. 5-13-11 ..... Set 10-in. 97 ft.
S. A. Guy's No. 1 Dowling Bros., 469 ft. E, 382 ft. S, NW cor. NE, Sec. 31-14-14 ..... Abd; leases out.
Keatchie O. & G. Co.'s No. 1 Hallie Smith (was H. E. Weichert's), NE SE, Sec. 31-14-15 ..... S.D. 2,350 ft.
C. D. Neff et al's No. 1 Ramsey, 1,000 ft. W, 400 ft. S, NE cor. SE, Sec. 33-13-16 ..... S.D; W.O; bit in hole 3,000 ft.
Ernest Nickelson's No. 1 Nabors, 1,200 ft. N, 1,800 ft. W, SE cor., Sec. 32-13-11 ..... Cmtd. 8-in. 1,170 ft; T.D. 1,310 ft.
E. T. Oakes' No. 1 R. H. Bryant and others, Sec. 30-13-15, 200 ft. N and W of SE cor. NE NW..... Location.

NATCHITOCHES PARISH

W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 28-9-10 ..... Tested salt water; D.S. test 4,020-91 ft; W.O.
J. W. Cooper et al's No. 1 Cooper, NW SW, Sec. 35-11-10.. Tested dry; D.S. test 2,980-3,060 ft; reaming.
Cooper et al's No. 2-A Cooper, C SE SE, Sec. 32-11-10.. S.D. 1,518 ft.
Gulf Ref. Co.'s No. 1 Bodcaw, 1,910 ft. S, 605 ft. W, NE cor., Sec. 13-13-8 ..... Dry and abd. 4,219 ft.
C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10 ..... Dry; arranging to deepen 1,269 ft.

RED RIVER PARISH

La. Oil & Dev. Co.'s No. 2 La. Delta Pecan Co., 2,950 ft. S, 300 ft. E, NW cor., Sec. 27-13-11 ..... Spudded in; S.D. 50 ft.
Lucky Strike Oil Co.'s No. 1 Chaffraix, 200 ft. S, 200 ft. E, C, Sec. 32-12-10 ..... T.A. 3,010 ft.

RICHLAND PARISH

Alto Gas Co.'s No. 2 Hunt, 660 ft. S and E, NW cor., Sec. 13-17-5 ..... Derrick.
Southern Carbon Co.'s No. 1 Rosengraut & Ducomb, 2,000 ft. E, 660 ft. S, NW cor., Sec. 24-17-5 ..... Location.
Southern Carbon Co.'s No. 2 Rosengraut & Ducomb, 1,980 ft. N, 660 ft. E, SW cor., Sec. 19-17-6 ..... Location.
Southern Carbon Co.'s No. 3 Rosengraut & Ducomb, 660 ft. S and E, NW cor., Sec. 30-17-6 ..... Location.
Southern Carbon Co.'s No. 1 C. M. Noble, 4,636 ft. N, 2,254 ft. W, cor. Secs. 7, 8, 17 and 18, in Sec. 37-15-6.. Salt water; abd. 2,495 ft.
Southern Carbon Co.'s No. 1-B C. M. Noble, 2,966 ft. N, 1,525 ft. W, cor. Secs. 7, 8, 17 and 18, in Sec. 37-15-6.. Location.
United Gas Public Service Corp.'s No. 3 Earle, NE cor., Sec. 25-17-5 ..... Set 12½-in. 175 ft; drlg. 910 ft.
United Gas Public Service Corp.'s No. 4 Earle, SE cor., Sec. 1-16-5e ..... Set 15½-in. 185 ft., 10-in. 855 ft.

SABINE PARISH

Durham Oil Co.'s No. 1 Polly (was Davis et al's), NE cor. NE NE, Sec. 18-8-12 (was Stacy et al's)..... Drlg. 2,400 ft.
Diffie & Barnett's No. 1 Lites (was J. W. Clark's), 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 34-8-11... S.D. 105 ft.
Franks et al's No. 1 Hays, 200 ft. N, 300 ft. E, SW cor. SE, Sec. 22-8-11 ..... Dry and abd. 2,534 ft.
R. L. Gay tr.'s No. 1-A Long-Bell Lbr. Co., 430 ft. S, 200 ft. W, NE cor. NW NW, Sec. 10-8-13..... Rigging up.
John Henry O. & G. Co.'s No. 3 Cook Land Co., 330 ft. W, 1,980 ft. S, NE cor., Sec. 34-10-12..... Drlg. 690 ft.

Lacey Prod. Co.'s No. 1 Cooper, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 30-8-11 ... W.O.S.R; T.D. 2,620 ft.
Lide et al's No. 1 Ponder, 990 ft. N, 990 ft. W, C Sec. 15-7-11 ... W.O.S.R. 2,800 ft.
Lide et al's No. 2 Ponder, 200 ft. S, 200 ft. E, NW cor. NE NW, Sec. 15-7-11 ... Arranging to deepen 2,520 ft.
Jean Longoria's No. 1 Belton (no check), Sec. 31-9-13 ... Drlg. 1,350 ft.
Merritt et al's No. 1 Byrd, 200 ft. N, 200 ft. W, SE cor. NW, Sec. 1-7-11 ... Flowing 1,200 bbls. daily 2,445 ft.
Packard O. & G. Co.'s No. 1 Smith (was Caddo-Sabine Synd.'s), Sec. 8-7-10 ... S.D. 2,502 ft.
H. W. Perritt's No. 4 Bowman-Hicks, SE cor. SE NE, Sec. 2-7-12 ... Location.
H. W. Perritt's No. 1 Boring, NW cor. NW NW, Sec. 11-7-12 ... Rigging up.
A. H. Thames' No. 1 Edward est., 150 ft. NW of SE cor. NE SE, Sec. 8-8-13 ... Location.
Trans-America Oil Corp.'s (was Southland Oil Co.'s), No. 1 Carter, 1,030 ft. W, 345 ft. N, SE cor. SE NE, Sec. 36-8-12 ... W.O; T.D. 2,540 ft.
John Woodley's No. 1 Sabine Lbr. Co., 400 ft. S, 330 ft. W, NE cor. SE, Sec. 12-8-12 ... Cmtd. 6⅝-in. csg. 2,310 ft.

TENSAS PARISH

Seip et al's No. 1 Fowler, C SW NE, Sec. 10-10-10 ... Arranging to drill 905 ft.
A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ... S.D. 2,310 ft.

UNION PARISH

Fred A. Green's No. 1 U. S. Govt., 660 ft. N, 1,980 ft. W, SE cor. NE, Sec. 26-20-3e ... Location.
Nemours Corp.'s No. 1 Pace-Hamby, 660 ft. NE of SW cor., Sec. 35-22-3e ... Set 6-in. 640 ft.
Nemours Corp.'s No. 1 Stranger, 957 ft. N, 2,180 ft. E, SW cor. NW, Sec. 14-21-3e ... Set 8-in. 765 ft; drlg. 1,500 ft.

VERNON PARISH

Weir & Smith's No. 1 Delta Land Co., Sec. 14-2-11, 200 ft. S and W of NE cor. section ... Began drlg. Mar. 23; drlg. 300 ft.

WEBSTER PARISH

Coyle tr.'s No. 1 Frazer, 200 ft. N, 200 ft. E, SW cor. NE SE, Sec. 27-23-11 ... Derrick.
Red Hawk Oil Co.'s No. 1 Mathews, 330 ft. N, 330 ft. E. C, Sec. 11-23-9 ... Drlg. 2,518 ft.

ARKANSAS

CHICOT COUNTY

R. R. Smith's No. 1 Lytle, 660 ft. N, 660 ft. E, C, Sec. 21-18-3 ... T.A. 2,925 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C NW SE, Sec. 4-20-3 ... Drlg. gumbo 1,170 ft.

CLEBURNE COUNTY
(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9 ... S.D. 3,740 ft.

CRAWFORD COUNTY

Citizens Gas Co.'s No. 1 G. W. Hood, 600 ft. S, 300 ft. E, NW cor. NE SE, Sec. 13-9-32 ... Estimated 20,000,000 ft. dry gas 966 ft.

DALLAS COUNTY

E. C. Brewer's No. 1 W. E. Hillman, 330 ft. E, 40 ft. S, NW cor. SE NE, Sec. 20-10-13 ... Tested dry 2,628-49 ft; coring 2,671 ft.
J. H. James tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. NW NE, Sec. 11-9-15 ... Coring chalk 2,370 ft.

GARLAND COUNTY
(Cable tools)

Givins et al's No. 1 Garrett, 660 ft. S, 660 ft. W, C, Sec. 1-8-19 ... 1,300 ft. 5 3/16-in. in hole; T.A. 3,756 ft.

GRANT COUNTY

Spann & McClung's No. 1 Sarah Page, 660 ft. W, 660 ft. S, NE cor. NW, Sec. 3-3-12 ... Waiting on drilling line 464 ft.

HOT SPRINGS COUNTY

John Watkins' No. 1 Cunningham (was J. R. Lockhart's), 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16 ... Waiting on drill stem 220 ft.

LAFAYETTE COUNTY

McIver et al's No. 1 Hattle, NW cor. NE, Sec. 1-20-6 ... S.D. for fuel 2,345 ft.
Smitherman & McDonald's No. 1 Reed, 200 ft. N, 200 ft. W, SE cor. NW NW, Sec. 16-15-22 ... 800 ft. fluid, ¼ oil, ¾ wtr; 1,194 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-29 ... Location.
J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26 ... S.D; W.O. 3,570 ft.

MADISON COUNTY
(Cable tools)

J. W. Baxter's No. 2 Hallin, C, Sec. 17-16-25 ... T.A. 495 ft.
J. W. Baxter's No. 3 Hallin, NE SW, Sec. 1-17-26 ... T.A. 42 ft.

MILLER COUNTY

Bullock Oil Co.'s No. 1 Hervey, SE NE, Sec. 33-14-26 ... T.A; abd. 2,813 ft.
East Texas O. & G. Co.'s No. 1 Harvey, 500 ft. E, 300 ft. S, NW cor., Sec. 2-15-26 ... S.D. 2,961 ft.
E. & F. Oil Co.'s No. 1 E. L. Beck, 200 ft. S, 200 ft. E, NW cor. SW, Sec. 36-15-26 ... S.D. litigation; T.D. 2,968 ft.
Fitzwater et al's No. 1 Beck, 200 ft. N, 200 ft. W, SE cor. SW SE, Sec. 33-15-26 ... Set 10-in. 93 ft; S.D. 150 ft.
Gusher Bend Oil Co.'s No. 1 Adams, 120 ft. S, 300 ft. W, NE cor. NW, Sec. 26-14-26 ... S.D. 2,593 ft; W.O.
Lenz et al's No. 2 Johnson, SE cor., Sec. 24-15-16 ... S.D. 4,550 ft.
Lenz et al's No. 3 Johnson, 250 ft. W, 150 ft. N, SE cor. NE NW, Sec. 24-15-26 ... S.D. 2,850 ft.
J. D. McRae's No. 1 Smith, 150 ft. N, 150 ft. W, SE cor., Sec. 28-15-26 ... Derrick.
Salzer & McRae's No. 1 Rose, SW cor. NE SW, Sec. 9-16-26 ... S.D. fuel 475 ft.

OUACHITA COUNTY

Belmont et al's No. 1 Buck, SE cor. SE SW, Sec. 16-15-17 ... S.D. 2,907 ft.
Copenhaven et al's No. 1 Elliott, Sec. 11-15-17 ... Recmtd. 6-in. 2,185 ft; T.D. 2,190 ft.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14 ... S.D; W.O. 2,390 ft.
E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24 ... Derrick.

POPE COUNTY

Ark.-La. P. L. Co.'s No. 1 Baird, 760 ft. S, 660 ft. E, NW cor., Sec. 11-7-20 ... Drlg. 2,040 ft.
Ark.-La. P. L. Co.'s No. 2 McFaddin, 685 ft. N, 485 ft. W, SE cor. NE SW, Sec. 15-9-21 ... Drlg. 4,131 ft.

SCOTT COUNTY

Ark. Valley Gas Co.'s No. 1 Turner, C SE, Sec. 27-5-30 ... Abd. location; will not drill.
Heavener O. & G. Co.'s No. 1 Riser, Sec. 26-4-26 ... S.D. 1,536 ft.
Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29 ... Drlg. 1,240 ft.

SEBASTIAN COUNTY

Ozark Natural Gas Co.'s No. 1 A. B. Bryant, C SE NE, Sec. 28-8-30 ... Location.

UNION COUNTY

Chapman & Wilson's No. 1 A. H. Hadley, 330 ft. N, 330 ft. E, SW cor. NE SW, Sec. 3-18-13 ... 600 ft. fluid 30% S.W. in hole; T.A. 3,570 ft.
S. B. Hickman's No. 1 Hogg, 330 ft. S, 150 ft. E, NW cor. SE SE, Sec. 35-16-17 ... S.D. 3,328 ft; arranging to plug back to Natchitoches sand.
C. H. Murphy et al's No. 1 Union Saw Mill Co., 330 ft. E, 330 ft. N, SW cor. NW SW, Sec. 18-18-13 ... Dry and abd. 3,615 ft.

VAN BUREN COUNTY

Glenn Kohle et al's No. 1 Scalan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13 ... T.A. 50 ft.

WASHINGTON COUNTY
(Cable tools)

Delbert & Graves' No. 1 Cunningham, Sec. 14-15-32 ... S.D; W.O. 602 ft.
C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ... Drlg. hard sand 1,780 ft.
H. H. Taylor et al's No. 1 Runny, C NE SW, Sec. 1-13-29 ... S.D. 1,700 ft.

YELL COUNTY
(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21 ... S.D. 5,710 ft.

EAST TEXAS

BOWIE COUNTY

Devore & Midfield's No. 1 Roy B. Cooper, 200 ft. S, 200 ft. W of NE cor. R. B. Cooper 115-ac. tr., Wm. Ward Sur. ... Set 10-in. at 20 ft; drlg. 730 ft.
Maud-Redwater Oil Co.'s No. 1 Merritt, 175 ft. N, 175 ft. E, SE cor. G. W. Hardidge 100-ac. tr. on Floyd Merritt tr. in Y. S. McKinney Sur. ... S.D. 750 ft.
Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W of SW cor. J. H. Dyer Sur. ... Drlg. chalk 1,500 ft.
Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur. ... Derrick.

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S, NW cor. 127-ac. tr. in J. H. Murphy Sur. ... S.D. 3,600 ft.

CASS COUNTY

E. K. Atkinson's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur. ... Location.
Davis & Pigg's No. 1 Roy Brian, SW cor. Roy Bryan 88-ac. tr., Albert H. Latimer Sur. ... Derrick.
Sam B. Hunter's No. 1 Marshall Felker, 1,800 ft. E, 160 ft. N, SW cor. 66-ac. tr., Jno. L. Chambers Sur., landowner shows Jenkins on map ... Drlg. 1,050 ft.
Olds & Smith's No. 1 Atheny, 3,056 ft. W-E line, 856 ft. S-N line, J. C. Byers Sur. ... S.D. 1,600 ft.
John C. Rogers' No. 1 I. E. Lanier, 573 ft. N, 879 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur. ... S.D. 2,275 ft.
John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur. ... Drlg. 945 ft.
J. E. Smitherman's No. 1 Bell, 385 varas S, 108 varas W, NE cor. J. E. Ferrall Sur. ... Drlg. shale 3,553 ft.

HARRISON COUNTY

Corona Pet. Co.'s No. 1 A. J. Bohler, C, Bohler 140 ac. in SW cor. S. F. Sparks Sur. ... Drlg. 2,350 ft.
Crump & Hannegan's No. 1 Dunn, Betty Humphreys Sur. ... S.D. 3,560 ft; W.O.
W. M. Hobson tr.'s No. 1 P. P. Taylor, Hy Vardaman Sur. ... Drlg. 2,650 ft.
O. H. Parkening's No. 1 T. J. Taylor, C, Blk. 22, W. H. Payne Sur. ... Rigging up.
O. H. Parkening's No. 2 T. J. Taylor, C, J. C. Hawley Sur. ... Derrick.
W. G. Ray Drlg. Co.'s No. 1 F. C. Hall, D. Davis Sur. ... Drlg. 2,750 ft.
Rowe-Nichlos' No. 1 Pitts, E. A. Merchant Sur. ... Location.
Seigal Bros. and Kelinson's No. 1 Taylor (no check), F. O'Niel Sur. ... Derrick.
Sinclair O. & G. Co.'s No. 1 Cora L. Davenport, Jno. B. Morton Sur. ... Rigging up.

MARION COUNTY

Eden Oil Co.'s No. 1 J. M. DeWare est., 150 ft. S, 1,507 ft. E, NW cor., S. R. Hazelwood Sur. ... Began drlg. Mar. 21; set 10-in. 400 ft.
Geo. Hindman et al's No. 1 F. V. Lindsey, 2,500 ft. S, most northerly N line, 3,555 ft. E most easterly W line, Alexander Albright Sur. ... S.D. repairs 400 ft.
Hindeman & Rhondo's No. 1 McGaughey, 1,547 ft. W, most northerly SW cor., 1,638 ft. N most northerly S line, W. J. Willis Sur. ... S.D. 2,300 ft.
P. E. Hussey's No. 1 A. A. Trammell, Chas. Lockhart Sur. ... S.D. 1,884 ft.
Shasta Oil Co.'s No. 1 B. E. Johnson, approximately 1,500 varas E and 500 varas S of SE cor. E. S. T. Greer Sur. in Wm. Mason Sur. ... S.D. 1,735 ft.
Sinclair O. & G. Co.'s No. 1 White, C. S. White Sur. ... Began drlg. Mar. 18; drlg. 2,253 ft.
Sinclair Oil & Gas Co.'s No. 1 D. R. Coulter, W. Russell Sur. ... No check; derrick pattern.

PANOLA COUNTY

Everette Drlg. Co.'s No. 1 E. L. McDaniels, 200 ft. S, 200 ft. W, NE cor. McDaniels' 116 ac., Alanson Barr Sur. ... Skidded 200 ft. north; drlg. 350 ft.
The Texas Co.'s No. 2 G. W. Brumble, 400 ft. S, 200 ft. E, NW cor., Jno. Womack Sur. ... Set 10-in. 1,200 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. ... S.D. 2,795 ft.
Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. ... S.D. 2,280 ft.

SHELBY COUNTY

I. M. Bradley's No. 1 Ashberry (no check), G. W. Mitchell Sur. ... Derrick.
E. L. Chapman's No. 1 Pickering Lbr. Co., C. E. Henry (headright) ... Drlg. 420 ft.
Chapparell Oil Co.'s No. 2 Holt, Matthew Moore Sur. ... S.D. 3,111 ft.
Sloan Prospecting Co.'s No. 1 Sanford, approximately 300 ft. N and 200 ft. E, SW cor. B. Sanford 49-ac. tr. in M. M. Vann Sur. ... Rigging up.
Sloan Prospecting Co.'s No. 1 Windham, H. English H.R.S. ... No check; derrick pattern.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 40)

The Texas Company's No. 2 Winfree, west flank, W. D. Smith Sur., 264 ft. N, 50 ft. W at right angles out of SE cor. of lease ... T. D. 1,063 ft.; sidetracking 3,687-3,713 ft.; to straighten hole.
The Texas Company's No. 3 Winfree, west flank, W. D. Smith Sur., 478 ft. N and 50 ft. W at right angles out of SE cor. of lease ... Drlg. shale, lime and sand 4,180 ft.
The Texas Company's No. 5 Wilburn, east flank, Wm. Hodges Sur., 400 ft. SW of No. 4 Wilburn and 50 ft. from SE line of lease ... Rig.
Yount Lee O'l Co.'s No. 10 Woodward, southeast ... Drlg. shale and lime 5,635 ft.
Yount Lee Oil Co.'s No. 16 Chambers, Wm. Bloodgood Sur., 50 ft. from W line of tract in line with Nos. 15 and 12 (workover) ... Comp. flowing 330 bbls. daily on ¼-in. choke, 400 lbs. pressure; sand 5,293 ft.; sanded.
Yount Lee Oil Co.'s No. 18 Chambers, south flank, Wm. Bloodgood Sur., 100 ft. N Sun Oil Co.'s No. 7 ... Set 62 ft. screen 4,465 ft.; comp. flowing 690 b bls. daily on ¾-in. choke; pressure 320 lbs.
Yount Lee Oil Co.'s No. 19 Chambers, south flank, Wm. Bloodgood Sur., 10 ft. N Sun Oil Co.'s No. 8 ... Salt 3,406-5,691 ft.; sidetracked and drlg. 1,400 ft.
Yount Lee Oil Co.'s No. 6 Phillips, east ... Rig standing.
Yount Lee Oil Co.'s No. 1 Winfree, west ... Set 174 ft. screen 5,495 ft.; comp. flowing 1,250 bbls., 600 lbs. pressure; ¾-in. choke.
Yount Lee Oil Co.'s No. 2 Winfree, west flank, W. D. Smith Sur., 50 ft. from S line and 100 ft. from E line of tract ... Drlg. sandy lime 4,778 ft.
Humble & Valley's No. 12 Payne, Wm. White Sur., 500 ft. SE of No. 9 ... Drlg. shale and sand 3,518 ft.
Humble & Valley's No. 1 Martha Remmert ... Location.

One of the largest Drilling Contractors in Mid-Continent Field says:

MISSION SLIPS

"easy to handle"

CARL SHORT
DRILLING CONTRACTOR
BOX 1092
DALLAS, TEXAS

TELEPHONES
OFFICE L D 692
RES 9-9804

Hobbs, N.M.
January 14, 1931

Mr. W. B. Sharp, Pres.
Mission Sales Company,
Houston, Texas.

Dear Sir:-

As per request of your representative we are advising you of our experience with Mission Rotary Slips.

We have been using your Slips for some time, chiefly for the reason that their operation has increased the saving of our drill pipe, inasmuch as they will not cut or mar. We find them to be reliable, and easy to handle; also the fact that fifteen or twenty minutes is ample time to replace the Dogs or Teeth, should they get dull.

We are operating in the Hobbs, N.M. field as well as in other states, and your Slips are standard equipment on our rigs and we are glad to give them our endorsement.

Yours very truly,

CARL SHORT DRILLING CONT.
By W. H. Spurlin
Drilling Supt. Hobbs, N.M.

The Carl Short Drilling Crew at Hobbs, N. M., State C-1 Amerada Petroleum Corporation.
Left to right:
L. J. Curry, Derrick Man
W. J. (Peewee) Spurlin, Supt.
Lee O'Banion, Driller
C. K. Stillwagon, Mission Sales Representative
Morgan Parker, Fireman
W. H. Marlow, Floorman
Earl Neill, Floorman

AMPLE STOCKS AT THE CONVENIENT SUPPLY STORES OF

Republic Supply Company

OIL AND GAS WELL SUPPLIES
Cable and Rotary Tools

GENERAL OFFICES: HOUSTON, TEXAS

RACCOON BEND—AUSTIN COUNTY

Humble & Valley's No. 3-A Grawunder, Wm. White Sur., 1,100 ft. southwesterly from NE line in center of 72-acre tract ..... Comp. gas well 240 lbs., sand 962 ft.; shut in.

Humble & Valley's No. 5 Sherrod ..... Abandoned location.

Humble & Valley's No. 13 Thompson ..... Abandoned location.

HUMBLE—HARRIS COUNTY

LaRue, trustee's No. 1 Crane, northwest ..... Derrick standing.

M. LaRue's No. 1 Tuffly, northwest ..... Gumbo 1,405 ft.; shut down.

Southern Coastal Oil Co.'s No. 2 Perkins ..... T. D. 2,904 ft.; set screen 2,898 ft.; bailing.

Sun Oil Co.'s No. 17 Bender (workover), Adams Sur., 217 ft. E and 50 ft. S of NW cor. Lot 9 ..... Temporarily abnd. 4,423 ft.

Sun Oil Co.'s No. 21 Bender, Adams Sur., Bender South Addition, 300 ft. NW No. 15 ..... T. D. 4,212 ft.; sand 4,167-4,208 ft.; set 48¼ ft. 4½-in. screen; comp. flowing 475 bbls.

Sun Oil Co.'s No. 1 Beck, west flank ..... Shale 4,700 ft.; cmtd. 7-in. csg.

The Texas Company's No. 29 G.O.&G. (workover), J. B. Stevenson Sur. ..... Pulled liner to deepen 3,185 ft.

Trapshooter Oil Co.'s No. 3 Rosenbaum ..... Standing 4,067 ft.

Trapshooter Oil Co.'s No. 10 McNeil, northwest ..... Salt 1,806 ft.; abandoned.

PIERCE JUNCTION—HARRIS COUNTY

Anderson & Plummer's No. 6 Whitehead (workover), J. Hamilton Sur. ..... Old total depth 6,591 ft.; sidetracked to sand showing oil 4,650 ft.; tested salt water and abandoned.

Bryan Ward, trustee's No. 1 Prudential (D.D.) ..... Set 82 ft. 3-in. screen 4,559 ft.; comp. pumping 200 bbls.

Gulf Prod. Co.'s No. 1 Manchester (workover) ..... Drlg. sand and lime 4,321 ft.

Gulf Production Co.'s No. 32 Taylor, James Hamilton Sur. (D.D.) ..... Pulling screen to deepen 4,660 ft.

Trapshooter Reilly Oil Co.'s (formerly Mike Kouri's) No. 1 fee, B.B.B.&C. Sur. No. 1,028, 21 ft. from W line and 20 ft. from S line, Blk. 10 ..... Set 100 ft. 4-in. screen 4,235 ft.; tested salt water; plugged to 4,175 ft.

Rio Bravo Oil Co.'s No. 14-A Settegast (workover) ..... Drlg. hard sand 5,008 ft.

Rio Bravo Oil Co.'s No. 31-A Settegast, J. Kopman Sur., 400 ft. S and 200 ft. E of NE cor. "A" lease ..... Derrick.

Rio Bravo Oil Co.'s No. 102 G.H.&S.A., B.B.B.&C. Sur. No. 1,028, 35 ft. S of C of railroad track and 50 ft. E of No. 101 ..... Drlg. shale showing oil 4,441 ft.

Smith et al's No. 1 Bender fee, B.B.B.&C. Sur. No. 1,028, 173 ft. from E line and 14 ft. from N line of Lot 40, Jones Subd. ..... Sand showing oil 4,467 ft.; cmtd. 6⅝-in. csg. 4,159 ft.; drld. plug and set 1 joint 4½-in. screen 4,469 ft.; rigging up to pump.

Tilton & Perot's No. 1 Gulf fee, B.B.B.&C. Sur. No. 1,028, 230 ft. from E line and 26 ft. from S line, Lot 26, Jones Subd. ..... Drlg. gumbo 1,512 ft.

Superior Oil Corp.'s No. 2 Boyles (workover), B.B.B.&C. Sur. No. 1,028 ..... No report.

Warner-Quinlan's No. 2 Minchen, B.B.B.&C., Sur. No. 1,028, 44 ft. from S line, Lot 5, and 134 ft. due W of No. 1, Lot 7 ..... Drlg. sandy shale 4,316 ft.

BIG CREEK—FORT BEND COUNTY

Gulf Production Co.'s No. 52 Davis M. Young Sur. (workkover) ..... Rig up to deepen 3,766 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 13 Mayes, B.B.B.&C. Sur. No. 4, 75 ft. W and 700 ft. S of NE cor. of survey ..... Rig.

SPINDLETOP—JEFFERSON COUNTY

Yount Lee Oil Co.'s No. 41 McFaddin (workover), P. Humphreys Sur. ..... Drlg. sand and shale 5,235 ft.

Yount Lee Oil Co.'s No. 146 McFaddin, P. Humphreys Sur., 2,772 ft. from W line and 2,528 ft. from N line of tract ..... Drlg. shale and lime 5,392 ft.

HIGH ISLAND—GALVESTON COUNTY

Marrs McLean's No. 15 Cade (workover), M. Fitzsimmons Sur., 150 ft. W No. 13 ..... Rig up to deepen 4,008 ft.

Marrs McLean's No. 20 Cade ..... Rig standing.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 22 Moore (workover) ..... Drlg. shale 5,697 ft.

Gulf Prod. Co.'s No. 28 Moore ..... Shale, no show, 4,241 ft.; set 6⅝-in. csg. 3,482 ft.

HULL—LIBERTY COUNTY

Republic Prod. Co.'s No. 142 Dolbear, Jesse Devore Sur., 2,160 ft. from N line and 2,712 ft. from E line of lease ..... Set 45 ft. 4½-in. screen 2,324 ft.; comp. gas well 700 lbs. pressure on 9/32-in. choke.

CLAY CREEK—WASHINGTON COUNTY

Sun Oil Co.'s No. 5 Caraway, J. F. Perry Sur., 300 ft. from W line and 600 ft. N of No. 2 ..... Set 87 ft. 4½-in. screen and 1 joint blank 1,367 ft.; comp. flowing 125 bbls., 230 lbs. pressure.

Sun Oil Co.'s No. 6 Witt, J. F. Perry Sur., 400 ft. SE of No. 5 ..... Set 108 ft. 4½-in. screen and 170 ft. blank 1,244 ft.; comp. 180 bbls.

Sun Oil Co.'s No. 5 Clay, J. F. Perry Sur., 200 ft. from SW line and 1,850 ft. from SE line of Clay tract.... Cmtd. 10-in. csg. 150 ft.

ALLEN—BRAZORIA COUNTY

Mills Bennett Prod. Co.'s No. 2 Random, J. G. and G. W. McNeel ⅛ League, 860 ft. southwesterly along N line from NE cor. and 100 ft. southwesterly at right angles from said line ..... Heaving shale 5,308 ft.; drill pipe stuck; abandoned.

Mills Bennett Prod. Co.'s No. 1 Poole, T. & W. Alley League, 1,390 ft. from E line and 100 ft. from S line (workover) ..... Pulling screen to deepen 4,374 ft.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds' No. 7 Davis, David Kokernot Sur., 100 ft. S of No. 4 ..... Drlg. sand and boulders 1,245 ft.

Cranfill-Reynolds Oil Co.'s No. 1-C Kirby fee ..... T. D. 5,753 ft.; set 9⅝-in. csg. 3,643 ft.

Cranfill-Reynolds Oil Co.'s No. 2 Moore's Bluff (workover) ..... Drlg. sand 2,896 ft.

BLUE RIDGE—FORT BEND COUNTY

Doney & Means' No. 1 Blakely, R. Drew Sur., SW cor. E half, Lot 8, Blk. D ..... Moving in.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 12 Boyt, H.&T.C. Sur. No. 32, 500 ft. E of No. 11 ..... Set 1 joint screen 4,345 ft.; comp. flowing at rate of 1,500 bbls. pipe line oil on ½-in. choke, 375 lbs., 25 gravity.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 111-A Cotton ..... Comp. pumping 55 bbls. oil 485 ft.

MOSS BLUFF—LIBERTY AND CHAMBERS COUNTIES

Gulf Prod. Co.'s No. 3 McFaddin, east flank ..... Sand and shale 6,195 ft.; reaming.

Humble Oil & Ref. Co.'s No. 2 Breeding, northwest flank.. Sandy shale showing oil 5,643 ft.; reaming.

Humble Oil & Ref. Co.'s No. 7 Sterling, east flank ..... Sandy shale showing oil 5,855 ft.; cmtd. 7-in. csg.; drlg. plug.

Humble Oil & Ref. Co.'s No. 2 Sergeant, east flank ..... Sand and shale 5,891 ft.; cmtd. 7-in. csg. 5,730 ft.

Texas Gulf Sulphur Co.'s No. 3 W. A. Carter, B. M. Spinks Sur., 300 varas E along N line 60-acre tract from NW cor. of tract and 50 varas E at right angles ..... Sulphur test; abandoned.

Texas Gulf Sulphur Co.'s No. 1 Munger, J. McFaddin Sur., 100 ft. N and 75 ft. W out of SE cor. of 160-acre tract ..... Sulphur test.

Texas Gulf Sulphur Co.'s No. 1 Cowan, B. M. Spinks Sur., 200 ft. N and 1,150 ft. W of SE cor. 154-ac. tract ..... Sulphur test.

REFUGIO—REFUGIO COUNTY

Houston Oil Co.'s No. 14 Pratt-Hewitt-Rooke ..... Reaming 5,568 ft.

Houston Oil Co.'s No. 5 Wilson Heard (workover) ..... Pulled screen and liner 3,686 ft.; reaming to bottom.

Houston Oil Co.'s No. 4 Mrs. M. H. Ryals ..... Reset screen 3,668 ft.; failed to flow; to put on air lift.

Houston Oil Co.'s No. 1 Rooke ..... Drlg. sandy lime 6,640 ft.

Houston Oil Co.'s No. 1 Doughty ..... Total depth 6,465 ft.; sidetracked stuck drill stem 4,503 ft.; drlg. shale 5,642 ft.

Houston Oil Co.'s No. 3 Rose Lambert ..... Cored sand showing oil 5,879-82 ft.; making drill stem test.

Houston Oil Co.'s No. 1 O'Brien (D.D.), Blk. 5 ..... Drlg. hard lime 6,277 ft.

Moody-Seagraves Prod. Co.'s No. 6 Morgan-O'Connor ... T. D. 6,470 ft.; plugged to 6,431 ft.; tested salt water; abnd.

Moody-Seagraves Prod. Co.'s No. 7 O'Connor ..... Oil sand 6,436-49 ft.; comp. gas well, 2,000 lbs. pressure; spraying gasoline.

Moody-Seagraves Prod. Co.'s No. 2-A J. F. B. Heard .. Rig standing.

Moody-Seagraves and Phillips Petroleum Co.'s No. 2 Mercy Academy, 167 ft. from N line and 666 ft. from E line of tract ..... Sand showing oil 6,388-6,417 ft.; cmtd. 6⅝-in. csg. 6,389 ft.

Moody-Seagraves Prod. Co.'s No. 1 Shelly ..... Drlg. shale 6,090 ft.

Pearson Properties, Inc.'s No. 4 Ryals, Refugio Town tract, 150 ft. from S line and 190 ft. from W line of Ryals tract ..... Drlg. sandy shale 6,239 ft.

Ed Price's No. 3 Mission River, Refugio Town tract, 750 ft. up river from No. 2 on S bank of river ..... Shut down 350 ft.

L. L. Smith's No. 2 Rogers, James Power Sur. ..... Drlg. sand showing salt water 6,-300 ft.

United Prod. Corp.'s No. 1-A Fox, L. Brown Sur., 750 ft. W along S line from SE cor. of lease and 1,000 ft. N of said line ..... Hard sand 3,810 ft.

United Prod. Corp.'s No. 3 Fox (workover) ..... Drlg. shale and lime 6,090 ft.

United Prod. Corp.'s (Union) No. 11 Fannie Heard ..... Drill stem stuck 5,780 ft.; sidetracked to 4,333 ft.; abandoned.

United Prod. Corp.'s No. 12 Fannie Heard ..... Location.

United Prod. Corp.'s (Union) No. 2 Moss-Powers, Blk. 109 ..... Derrick.

United Prod. Corp.'s No. 9 O'Brien, 150 ft. S of S line and 175 ft. E of extended W line of Moody-Seagraves' O'Brien "B" lease ..... Rig.

United Prod. Corp.'s No. 10 O'Brien, 150 ft. E of E line of Blk. 106, Refugio Townsite, and 428 ft. N of Refugio Town Tract Sur. ..... Drlg. sticky shale 6,307 ft.

United Prod. Corp.'s No. 11 O'Brien, 200 ft. from E line and 500 ft. N of extreme S line of lease ..... Drlg. shale and lime 5,390 ft.

United Prod. Corp.'s No. 3 Powers, Refugio Town tract, 250 ft. W of E line and 200 ft. N of S line of lease (workover) ..... Oil sand 6,454-61 ft.; set 18 ft. 4½-in. screen; comp. 300 bbls., 2,100 lbs. pressure on csg. and 1,800 lbs. on tubing; quarter-in. chokes.

United Prod. Corp.'s No. 6 Power, S Blk. 83, Refugio Townsite ..... Drlg. hard lime 1,055 ft.

United Prod. Corp.'s (Union) No. 2-A Rose Lambert, 175 ft. W and 200 ft. N of SE cor., Blk. 1, of town tract ..... Rig up for second hole; old hole junked 1,460 ft.

United Prod. Corp.'s No. 2 Mitchell (workover), 150 ft. out of NW cor. Mitchell 150-acre tract ..... Sand showing oil 6,430-40 ft.; cmtd. 7-in. (O.D.) csg. 6,437 ft.

United Prod. Corp.'s No. 4 Mitchell (workover) ,150 ft. out of NE cor. Mitchell 150-acre tract ..... Oil sand 6,437-51 ft.; cmtd. 7-in. csg. 6,437 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Union Sulphur Co.'s No. 2 Martha Moss ..... Drlg. sandy shale with streaks of sand showing oil 5,593 ft.

Vacuum Oil Co.'s No. 7 Bordages, Sec. 9-10s-9w (workover) ..... Drlg. sandy shale showing oil 3,-769 ft.

Vacuum Oil Co.'s No. 9 Bordages ..... Set 1 joint 6⅝-in. screen 6,525 ft.; comp. 1,250 bbls. P.L.O. and 1,000,000 ft. gas, 1,200 lbs. pressure; ⅝-in. choke; gravity 40.7°.

Vacuum Oil Co.'s No. 8 Farquahar (workover), 850 ft. S and 190 ft. E of NE cor. NE SE Sec. 8-10s-9w ....

Vacuum Oil Co.'s No. 7 State, 319 ft. N and 260 ft. W SE cor. NE Sec. 8-10s-9w ..... Drlg. sand showing oil 5,508 ft. Drlg. sticky shale 4,155 ft.

EDGERLY—CALCASIEU PARISH

Rex Pet. Co.'s No. 2 Prairie Narroni, Sec. 21-9s-11w, 365 ft. from S line and 50 ft. from E line of lease ..... Drlg. hard sand 3,450 ft.

HACKBERRY—CAMERON PARISH

Federal Petroleum Co.'s No. 2 Hebert, 660 ft. S and 660 ft. W of NE cor. NW NW, Sec. 33-12s-10w ..... Drlg. 1,100 ft.

R. E. Seiss' No. 2 J. M. Vincent ..... Shut down 510 ft.

The Texas Company's No. 8 State ..... Derrick.

Yount Lee Oil Co.'s No. 34 State ..... Location.

Yount Lee Oil Co.'s No. 36 State ..... Location.

Yount Lee Oil Co.'s No. 37 State ..... Location.

Yount Lee Oil Co.'s No. 38 State ..... Location.

Yount Lee Oil Co.'s No. 39 State ..... Location.

VINTON—CALCASIEU PARISH

Gulf Production Co.'s No. 6 Gardner, 350 ft. N and 554 ft. W of SW cor. SE NE Sec. 33-10s-12w ..... Drlg. gumbo 2,926 ft.

Vinton Pet. Co.'s No. 11 Matilda Gray (20 acres), 605 ft. from S line and 195 ft. from E line of tract in Sec. 33-10s-12w ..... Derrick.

Vinton Pet. Co.'s (Lucky Ten) No. 1 Lizzo ..... Tested salt water 3,285 ft.; pulling liner and screen.

Wilson-Broach's No. 2 Wilson (workover), 280 ft. N and 126 ft. E SW cor. SE NE Sec. 33-10s-12w ..... Set 30 ft. 3-in. screen 3,612 ft.; bailing showing oil and water.

Wilson-Broach's No. 8 Wilson, Sec. 33-10s-12w, 100 ft. N of Gulf's No. 70 G.&N.G. Sur. ..... Set 20 ft. 4½-in. screen 3,137 ft.; comp. flowing 200 bbls.

JENNINGS—ACADIA PARISH

Yount Lee Oil Co.'s No. 9 Housierre-Latrielle, 5,978 ft. E and 330 ft. N of SW cor., Sec. 47-4s-2w ..... Drlg. shale 8,806 ft.

Fred I. Getty's No. 12 Clement (D.D.) ..... Comp. flowing 300 bbls. fluid, 15 bbls. net oil 2,084 ft.

BAYOU BOUILLON—ST. MARTIN PARISH

Humble Oil & Ref. Co.'s No. 1 Woodyard Lake ..... Total depth 6,061 ft.; sidetracking in white sand 5,934 ft.

Humble Oil & Ref. Co.'s No. 4 State ..... Drlg. hard sand 4,634 ft.

SWEET LAKE—CAMERON PARISH

Magnolia Pet. Co.'s No. 3 Sweet Lake, Sec. 5-13s-7w .... Drlg. 3,922 ft.

Pure Oil Co.'s No. 10 Yount Lee ..... Drlg. soft sand 6,842 ft.

DEEP BAYOU—ST. LANDRY PARISH

The Texas Company's No. 9 Botney Bay ..... Drlg. sandy shale 3,448 ft.

SORRENTO—ASCENSION PARISH

Gulf Ref. Co.'s No. 19 United Land Co. ..... Salt 4,796 ft.; to plug back.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 762 fee (workover) ..... Drlg. shale and lime 5,627 ft.

Union Sulphur Co.'s No. 765 fee, Sec. 29-9s-10w ..... Drlg. gumbo 1,936 ft.

Union Sulphur Co.'s No. 766 fee, Sec. 29-9s-10w ..... Drlg. shale and lime 3,340 ft.

BLACK BAYOU—CAMERON PARISH

Shell Pet. Corp.'s No. 12 Watkins (workover) ..... T. D. 5,321 ft.; plugged to sand 5,185 ft.

Shell Pet. Corp.'s No. 16 Watkins, Sec. 18-12s-12w, 1,590 ft. from E line and 1,610 ft. from N line ..... Sand showing oil 4,519 ft.; drlg. plug to test.

(Continued on Page 106)

Brief Items for Petroleum Refiners

ELECT HUGHES HEAD OF OLD DUTCH REFINING CO.

MUSKEGON, Mich., Mar. 28.—Election of Ernest L. Hughes, head of the Hughes Oil Co., of Chicago, has been elected president and general manager of the Old Dutch Refining Co., with a refinery in that city.

Mr. Hughes succeeds John Borden, Arctic explorer and adventurer, as president while Mr. Borden becomes chairman of the board of directors. Other officers of the company are: Vice president, John Manley, of Chicago; secretary, N. Buining, of Muskegon; and treasurer, F. H. Duggan, of Chicago.

It was also announced by Mr. Borden that the name of Gibson, Johnson & Borden, Inc., under which drilling and leasing operations have been pursued throughout the State and particularly in the Mount Pleasant area, has been changed to the Old Dutch Oil & Gas Co.

Oil from producing properties in the Mount Pleasant area is being shipped by rail to the Muskegon refinery. Enough additional production has been purchased, according to Mr. Hughes, to make a daily average of about 1,400 bbls. In addition about 1,000 bbls. daily is being run from the Muskegon Field so that the plant is running about 2,400 bbls. of crude daily.

PURE OIL INSTALLING GAS RECOVERY PLANTS

Pure Oil Co. has awarded a contract to Foster Wheeler Corp. covering the fabrication and installation of two complete absorption and stabilizer plants. One of these plants is to be located at Marcus Hook, Pa., and the other at Smiths Bluff, Tex. The Marcus Hook units will handle 6,000,000 feet of gas per day at 65 pounds per square inch pressure, and 5,000,000 feet at 35 pounds pressure. The Smiths Bluff plant will handle 8,000,000 feet of gas at 65 pounds pressure, and 5,000,000 feet at 35 pounds pressure. Gas is to be supplied from the company's refineries at these places.

KENTUCKY PLANT SOLD

BOWLING GREEN, Ky., Mar. 30.—Sale is announced of the refinery of the General Producers Co. at First Street and the Louisville & Nashville Railroad in Bowling Green. The purchasers of the plant are E. L. Lowther and others of West Virginia, who were represented in the deal by Rodes K. Myers. Max B. Harlan represented the owners of the property. The refinery was closed several years ago and has not been in operation since that time.

NEW PURCHASER IN EAST TEXAS

Independent Crude Oil Trading Co. of Dallas, Tex., have announced intention to begin purchasing crude oil in the new production area near Longview. Offices have been opened in Longview with T. J. Mullin in charge. Grading for a 50-car rack west of Longview, on the Texas & Pacific, has been completed by the Independent Pipe Line Co. which is also laying 5 miles of 6-inch pipe through the Lathrop area. Both constructions will be completed April 1.

VALVOLINE TO CINCINNATI

Executive offices of Valvoline Oil Co. are being moved from New York City to Cincinnati, Ohio, it was announced this week. The company is one of the oldest in the United States, having been founded in 1866. Refineries are located at Butler and Warren, Pa.

RUMANIA STABILIZING MOVEMENT HINGES ON SMALL INDEPENDENTS

NEW YORK, Mar. 30.—Steps for the stabilization of the Rumanian petroleum industry, through the centralization of all export sales and the allocation of home markets to small domestic refiners, have been proposed by the "Distributia," a marketing group controlled by Romano-Americana, Astra Romana, and the Steaua Romana companies. The plan put forward by this group has received considerable support, and it is expected that if their proposal is not acted upon favorably by the remainder of the Rumanian oil industry, drastic steps will be taken by the government for the settlement of conditions in the industry.

The agreement put forward by the co-operative group provides that small Rumanian refiners who have no sales organizations or branches outside of Rumania continue to refine the same average quantities of products per month as they have processed during the past three years, and that these products be taken over pro rata by the seven largest companies in the industry, these being as follows: Astra Romana, Romano-Americana, Steaua Romana, Uneria (Phoenix group), Concordia, Colombia, and Credit Minier. These companies would take over the products of the small refiners, at current quotations, and would market the output of the small companies, charging the latter a small fee for this service. There are approximateiy 25 small independent refiners in Rumania and this group, although responsible for only a small part of the country's output of refined products, has been instrumental in demoralizing market conditions through their overproduction of refined products and dumping of surplus stocks in both home and export markets.

The plan put forward by the major companies further provides that the total quantities of refined products needed for domestic consumption in Rumania will be divided in the ratio that the respecitve refiners' capacity bears to the total refining capacity, between the above mentioned companies and 12 other Rumanian companies which have agencies or marketing facilities outside Rumania.

The plan, if adopted, will equalize marketing opportunities for all of the Rumanian oil companies, and will result in the orderly marketing of surplus products in foreign markets, rather than the reckless dumping of distressed stocks which during recent months has not only depressed quotations in Rumania to record low levels, but has also virtually demoralized the American export market for gasoline and kerosene.

The Rumanian minister of industry and commerce, while not committed to the plan put forward by the major Rumanian companies, is understood to favor this plan and to be ready to project drastic legislation to achieve the same general results if the rank and file of the Rumanian industry does not co-operate in the present move.

Success of the present plan for stabilization of Rumanian refined products, it is believed, will be followed by steps on the part of the principal Rumanian oil companies for a renewal of the pact governing crude oil production which was abrogated late in 1930 after having successfully operated for a few months.

Several Complications

A number of vexing complications surround the crude oil situation in Rumania, however, and it is expected that adjustment of the crude production situation to a point where proration and conservation will be achieved will involve prolonged negotiations. A leading Rumanian company has contracted to supply the Spanish Petroleum Monopoly with a large part of its requirements of gasoline and other products this year, and this company will be compelled to either maintain a large crude production in Rumania, with resultant high rate of refinery operation, or enter the open market and purchase refined products in considerable quantities. While this latter step, of course, would be of material benefit in stabilizing conditions in Rumania, it is not believed that the company in question will be willing to make the sacrfices necessary to achieve this end.

Pending a satisfactory agreement for the curtailment of crude output and regulation of future development work, however, current unfavorable conditions in the Rumanian oil industry, whereby refined products are being sold at price levels considerably under the world parity, have resulted in a drastic curtailment in drilling operations in Rumanian fields, and this development is expected to aid in bringing about better conditions in the Rumanian oil industry.

Overproduction of crude petroleum and refined products in Rumania during 1930 resulted in an increase of more than 35 per cent in export shipments during the year. According to preliminary official statistics covering exports from Rumania last year, exports totaled 3,855,521 tons, an inerease of 1,032,621 tons over 1929 exports. Comparative figures follow:

	Metric tons	
Product—	1930	1929
Motor spirit	1,119,469	802,421
Kerosene	941,704	774,321
Gas oil	547,614	388,914
Lub oil	71,344	62,584
Fuel oil	1,103,661	788,641
Crude oil	69,362	2,542
Paraffin wax	2,366	3,477

During the latter part of 1930 Rumanian refined products were selling in export markets at record low prices, gasoline selling at a price equivalent to 2 cents per gallon f.o.b. Oklahoma refineries.

SUN LINE OPENS JUNE 1

The gasoline pipe line of the Sun Oil Co., connecting Cleveland, Pittsburgh, Philadelphia and Syracuse, is expected to be in operation by June 1, according to an announcement this week. The company's refinery at Marcus Hook, Pa., is the central point of the system. Delivery of gasoline through the line has been made as far west as Pittsburgh.

R. G. COLLINS DIES

R. G. Collins, who was general manager of sales of Standard Oil Co. of Indiana before his retirement in 1918, died suddenly in Washington last week at the age of 82 years. Mr. Collins was with the Standard company since 1887. He is susvived by two sons, Ren Collins, of Chicago, and Dr. Charles D. Collins, of Washington, D. C., and a daughter, Mrs. Charles W. Ott, of Milwaukee.

BUILDING CRACKING UNIT

Vulcan Refining Co., recently organized by officers of Vernon Oil Refining Co. as a separate concern, has started construction work on a 1,000-bbl. cracking plant at Vernon, Calif., where a new type of process will be used. Officers of the new company are J. A. Brower, E. O. Brower and W. N. Brower, president, vice president and treasurer, respectively, of the Vernon company, which has a 3,000-bbl. skimming plant at Vernon.

W. W. SCHEUMANN TO EMPIRE

W. W. Scheumann has been appointed chief chemist of the Empire Oil & Gas Co.'s research and control laboratory at Okmulgee. He succeeds A. L. Davis.

DR. WALTER H. CROSS DIES IN KANSAS CITY

Dr. Walter H. Cross, president of the Kansas City Testing Laboratory and dedeloper of one of the most widely used types of cracking process, died at his home in Kansas City, Mo., March 24. Doctor Cross was 53 years old and had been ill since December.

Doctor Cross received his degree as doctor of medicine at University (Missouri) Medical College and was for the 17 years following city chemist, performing an outstanding service in warfare against impure foods. With his brother, Dr. Roy Cross, Doctor Cross in 1905 took over the Kansas City Chemic-Technic Laboratories which they renamed. It was here that Dr. Walter Cross became interested in cracking oils in 1911.

After investigations covering many years, and narrow escapes such as that

Dr. Walter H. Cross

in 1914 when a drum of heated oil under pressure exploded severely burning him, Doctor Cross became the holder of a long series of patents covering his cracking process and saw its acceptance by such companies as Standard Oil Co. of New York, Standard Oil Co. of Indiana, Magnolia Petroleum Co., Pure Oil Co., Atlantic Refining Co., the Burma, Dutch-Shell and Anglo-Persian companies.

Funeral services were held Thursday in Kansas City. Surviving Doctor Cross are, his widow, Mrs. Anna H. Cross; two sons, Walter M. and Forbes Cross; a daughter, Miss Annette Cross; three brothers, a sister, and his mother, Mrs. C. W. Cross.

NEW CALIFORNIA PLANT

The L. O. Oil & Refining Co. has begun preliminary construction of a refinery on the L. C. Osborn property in the Fruitvale Field of Kern County. Plans call for the completion of the first unit within 90 days. The plant will be of commercial size, having a capacity of from 500 to 1,000 bbls. daily. Leddy & Osborn, Bakersfield oil operators, own and control this property.

NEW OKLAHOMA PLANT

Machinery for a skimming plant near Nowata, Okla., has been purchased by J. E. Perkins and Charles Brockler of Kansas City, Mo., and associates at Shawnee, Okla. It is planned to erect the refinery to take stripper well production in that area.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 102)

Shell Pet. Corp.'s No. 2 State, Sec. 18-12s-12w, 1,345 ft. from E line and 1,565 ft. from N line ..... Salt 4,207-4,519 ft.; sidetracking in salt 4,228 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Empire Gas & Fuel Co.'s No. 1 Kuntze, San Felipe ..... Drlg. black shale 6,333 ft.
O'Hara et al's No. 1 Schrader ..... Shut down 3,342 ft.
Tarmerson & Cafferkey et al's No. 1 W. M. Schlecte, John Fitzgibbons Sur., 1,850 ft. from SE line and 3,100 ft. from NE line of Sur. ..... Rig.

BRAZORIA COUNTY

The Texas Company's No. 1 Ewin, Harvey Little Sur..... Set 4½-in. csg. and 6 jts. screen (one-string job) 7,590 ft.; blew in estimated 50,000,000 ft. gas, 1,500 lbs. pressure; dropped to 100 lbs. pressure on csg. and now spraying salt water showing oil through drill stem; 250 lbs. pressure.

Freeport Sulphur Co.'s No. 2,001 fee, Bryan Heights ..... Heaving shale 5,260 ft.; S. D.
Layne et al's No. 7-A Wisdom, Damon Mound ..... Sand showing oil 3,648-53 ft.; set 8¼-in. csg. 3,610 ft.

Amerada Pet. Corp.'s (Rycade) No. 2 Seaburn, Stratton Ridge ..... Drlg. broken lime 7,306 ft.
United Oil Syndicate's No. 1 Speer, A. A. Talmadge Sur... Shale 1,687 ft.; washing to bottom.

BURLESON COUNTY

Paul Doran et al's No. 1 Sparks, H. E. Davis Sur., 6,700 ft. from S line of survey and 1,600 ft. W of Brazos River ..... Sticky shale 1,638 ft.; abandoned.
Mid-South Oil Co.'s No. 1 Duckworth ..... Tested brackish water 2,601 ft.; shut down.

Reynolds Oil Co.'s No. 1 Harris, 500 ft. from W line and 400 ft. from N line of J. M. McKean Sur. ..... Shut down 400 ft.

CALHOUN COUNTY

The Texas Company's No. 1 Smith, J. Timmons Sur., Will Mousin and Driscoll Sub. ..... Drlg. sticky shale 3,126 ft.

HARRIS COUNTY

Humble Oil & Ref. Co.'s No. 5 Minnetex, Mykawa, 150 ft. from S line and 200 ft. from W line, Lot 261, Wm. Lovett Sur. ..... Location.
Humble Oil & Ref. Co.'s No. 6 Minnetex, Mykawa, Wm. Lovett Sur., C of Lot 254 ..... Location.

JACKSON COUNTY

Chicago-Gulf Co.'s No. 1 Rogers (workover) ..... Rig up to deepen 3,662 ft.; standing.

JEFFERSON COUNTY

Humble Oil & Ref. Co.'s No. 1 McFaddin, T.&N.O. Sur. 234 ..... Drlg. shale 6,228 ft.
Keith et al's No. 1 Reed-Hankamer ..... Hard shale 4,003 ft.
The Texas Company's No. 4 Pipkin, Big Hill ..... Drgl. hard sand 5,064 ft.

LIBERTY COUNTY

Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.
Tucker et al's No. 1 Bell, H.&T.C. Sur. No. 4 ..... Gumbo 560 ft.; shut down.

MATAGORDA COUNTY

H. C. Cockburn's No. 2 Hawkins, Shepherd's Mott ..... Set 47 ft. 4½-in. screen 5,221 ft.; tested salt water; standing.

Empire Gas & Fuel Co.'s No. 1 Boker, Citrus Grove ..... Total depth 6,295 ft.; sidetracking 5,280 ft.

MONTGOMERY COUNTY

Lake Creek Oil Co.'s No. 1 Hunt, south of Conroe ..... Shut down 678 ft.; gumbo.
Price & Wilhite's No. 2 Guerges ..... Trying to set csg.; T. D. 3,552 ft.

ORANGE COUNTY

Crew Oil Co.'s No. 1 Mansfield ..... Changing rigs 1,412 ft.

SAN JACINTO COUNTY

Arkansas Fuel Oil Co.'s No. 1 A. J. McMurry, A. P. Gardner Sur., 1,255 ft. from N line and 1,945 ft. from W line ..... Drlg. rock 3,310 ft.
E. P. Edward et al's No. 1 Bennett, northwest of Cold Springs ..... Spudded and shut down.

TYLER COUNTY

King Oil Co.'s No. 1 Caswell ..... Sand and shale showing oil 1,255 ft.; cmtd. 6-in. csg. 1,218 ft.

Allied Pet. Co.'s (Texas Southern Pet. Co.'s) No. 3 Wilson, Mrs. E. Cherry Sur. No. 798, 1,500 varas from W line and 600 varas from N line ..... Drlg. sand and shale 4,752 ft.
Lew Wentz' No. 1 Long Bell, 800 varas E and 100 varas N from SW cor. James Seals Sur. ..... Drlg. gumbo 2,217 ft.

VICTORIA COUNTY

Newton et al's No. 1 West ..... Shut down 1,550 ft.
Lion Oil & Refining Co.'s No. 3-A McFaddin, M. Traviesa Sur., 925 ft. northeasterly on extended line from NE cor. of C. O. Edwards Sur. and 430 ft. N at right angles ..... Cmtd. 12½-in. surface pipe 1,023 ft.

United Gas Corp.'s No. 1-B McFaddin, M. Traviesa Sur., 3,700 ft. E and 500 ft. N from NE cor. C. O. Edwards Sur. ..... Drlg. 3,510 ft.

WASHINGTON COUNTY

Penn-Tex Oil Co.'s No. 2 Kamas Brenham, S. M. Williams Sur. ..... Drlg. gumbo 1,859 ft.
Vegua Oil Co.'s No. 1 P. Graves, S. Clampet Sur. .....
Oliver Drlg. Co.'s No. 1-A Hahn, J. H. Alcorn Sur. A-3... Shut down 1,855 ft.

WHARTON COUNTY

E. H. Givans' No. 2 Hudgins ..... Abandoned 1,344 ft.
H. H. Givens' No. 3 Hudgins, I. B. Phillips Sur., 19 ft. W of No. 2 ..... Drlg. shale 110 ft.

SOUTH LOUISIANA

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w ..... Shut down 875 ft.
J. O. Davis' No. 1 Industrial, Sec. 29-9s-10w ..... Set 6⅝-in. csg. with 172 ft. 6⅝-in. screen on bottom 6,568 ft.; drilled plug and bailed dry; standing.

Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w ..... Shut down 3,258 ft.
Dr. Thomas et al's No. 1 John Hewitt ..... Location.

CAMERON PARISH

Vacuum Oil Co.'s No. 2 Cameron Meadows, 3,120 ft. S and 1,900 ft. W from NE cor., Sec. 21-14s-9w (500 ft. S No. 1) ..... Drlg. sticky shale and lime 2,200 ft.

The Texas Company's No. 7 State, Calcasieu Lake ..... Location

IBERIA PARISH

The Texas Company's No. 6 Vermillion Bay ..... Drlg. shale 5,052 ft.
Jefferson Lake Oil Co.'s No. 10 Lake Peigneur, Jefferson Island ..... Drlg. black lime 1,951 ft.
Jefferson Lake Oil Co.'s No. 11 Lake Peigneur, Jefferson Island ..... Cap rock 612 ft.; cmtd. 10-in. csg. 610 ft.

IBERVILLE PARISH

Standard Oil Co.'s No. 1 Gay, Bayou Choctou..... Sand showing oil 4,158-74 ft.; cmtd. 7-in. csg. to test.

Standard Oil Co.'s No. 7 Wilbert, Bayou Blue ..... Derrick.
Standard Oil Co.'s No. 9 Wilbert, Bayou Des Glaise, 700 ft. E and 760 ft. N of SW cor. SE SW Sec. 78-8s-8e.. Cmtd. 18⅝-in. surface csg. 61 ft.
Standard Oil Co.'s No. 2 Case, Bayou Des Glaise ..... Location
Standard Oil Co.'s No. 1 E. B. and S. P. Schwing, Bayou Blue ..... Shut down for repairs 5,705 ft.
Standard Oil Co.'s No. 1 Baist Coopertage, Bayou Blue ... Drlg. shale 3,032 ft.

JEFFERSON DAVIS PARISH

H. T. McClain et al's No. 1 Trimble Atterbury, Welsh, Sec. 16-9s-5w ..... Csg. collapsed 5,680 ft.; fishing.
A. V. Peters' No. 1 Smith Subd., Welsh, 1,050 ft. N and 180 ft. E SW cor. Sec. 22-9s-5w ..... Location.

LA FOURCHE PARISH

The Texas Company's No. 2 L.L.&E. Co. (D.D.), 4,396 ft. S and 706 ft. E of the NW cor., Sec. 26-21s-22e.. Pulled screen 3,046 ft. and drlg. deeper in sandy shale 3,469 ft.

PLAQUEMINES PARISH

Humble Oil & Ref. Co.'s No. 2 Cockrell-Horan, Lake Grand Ecaille ..... Drlg. salt 5,825 ft.

ST. JAMES PARISH

Convent Oil Co.'s No. 2 Jacobs, Sec. 28-11s-6e ..... Shut down for repairs 2,242 ft.

ST. TAMMANY PARISH

Washington-St. Tammany's No. 2 Cossack, Sec. 5-6s-10e Shut down in gumbo 2,031 ft.

TANGIPAHOA PARISH

Ioan Development Co.'s No. 1 Lake Superior, Sec. 29-5s-9e, 540 ft. E, 675 ft. N of SW cor. ..... Total depth 3,035 ft.; shut down.

TERREBONNE PARISH

United Prod. Corp.'s No. 9 Minor, Houma ..... Shut down waiting orders 6,500 ft.
The Texas Company's No. 4 State, Caillou Island ..... Driving piling.
The Texas Company's No. 6 State, Caillou Island ..... Drlg. sticky shale 1,206 ft.
The Texas Company's No. 1 La.L.&E., Bay St. Elaine ... Hard sand and lime 4,751 ft.; drill stem stuck.

The Texas Company's No. 6 State, Bay St. Elaine ..... Location.
The Texas Company's No. 4 State, Dog Lake ..... Derrick.
The Texas Company's No. 5 State, Four Isle ..... Drlg. 250 ft.
The Texas Company's No. 3 La.L.&E., Bay Junop ..... Location.
The Texas Company's No. 4 La.L.&E., Bay Junop ..... Location.
The Texas Company's No. 5 State, Lake Barre ..... Capping piling.
The Texas Company's No. 8 State, Lake Barre ..... Drlg. blue shale 6,370 ft.
The Texas Company's No. 9 State, Lake Barre ..... Set screen 3,827 ft.; comp. 350 bbls pipe line oil daily.

VERMILLION PARISH

Pure Oil Co.'s No. 1 Southwest, Louisiana Land Co., Gueydan ..... Sand with some shale 6,594 ft.; temporarily abandoned.

VERNON PARISH

Smith & Wier's No. 1 Delta, NE. Sec. 14-2n-11w..... Moving in.

WEST FELICIANA PARISH

Putnam Syndicate's No. 2 Como Plantation, Sec. 51-1s-4w. Cmtd. 12-in. surface csg. 200 ft.

EASTERN FIELDS

(Continued from Page 47)

only a pocket of gas which was soon exhausted. Drilling on this well has been resumed in the hopes of striking oil. The same company is in the Clinton sand in its test on the W. B. Clark farm, Section 16, of the same township. On the Clay Tatten farm in Section 15, Perry Township, the same operator has reached 2,350 feet and 2,250 feet in a test on the W. A. Little farm, Section 17, same township. In New Castle Township, the Preston Oil Co. is down to 2,200 feet on the Cochran heirs farm, Section 21, and has reached approximately the same depth on the Verna Cochran farm. In Perry Township again this operator is drilling at 2,000 feet on the C. O. Mercer farm. Section 5, and has spudded in and started to drill on the Albert Mikesell farm, Section 7.

Muskingum County

In Muskingum County the Hopewell Fuel & Gas Co. is building a rig on the Z. Slick farm in Section 6, Hopewell Township, near the very fair producer, a test of the Preston Oil Co. on the M. Leasure farm. In the middle of last year this pool was developed and drilling was suspended on account of market conditions. In Washington Township, the Atha Oil Co. is down to 1,480 feet on the W. H. Doty farm, Section 12, and the Preston Oil Co. is about in the sand on the B. F. Slack farm, having reached 3,890 feet. In the same section the Wehrle Co. has a rig standing on the N. T. Coconis farm, and Wilson Brothers have a rig standing on their own property. In Wayne Township, the Preston Oil Co. has reached 3,850 feet on the Ed Frick farm, Section 9, and will soon be in the Clinton sand. In Perry Township, the Preston Oil Co. has a rig standing on the John C. Hicks farm, Section 16.

WEST VIRGINIA

There was but one small oil well completed in West Virginia during the week, and in a quiet district. On the waters of Flint Run, Clay district, Wirt County, Grover Whitecotton had a 2-bbl. producer in his second test on the G. C. Jackson farm.

Gas Wells

Boone County returned to activity with seven gas wells completed, none large. In Sherman district, Godfrey L. Cabot completed his No. 32 on the Federal Coal Co. tract, a small gasser. In the same district G. S. Coon completed three gassers on the A. J. Coon farm, Nos. 1, 2 and 3, respectively. In Washington district the Owens Illinois Glass Co. has a small well in a second test on the J. T. Roberts farm. In Cabin Creek district, Godfrey L. Cabot completed two small gas wells. No. 7 was on the Youghiogheny and Ohio Coal Co. tract, and No. 8 on the E. M. Arbogast farm.

Calhoun County continued disappointing in the latest two wells reported. In Washington district, George W. Hamilton and others drilled a test on the Ella Eisman farm in the Injun sand at 2,224 feet and it was a small gas well. In Sherman district, L. P. Bickel completed a test on the Jack Bland farm to a depth of 2,170 feet, the Injun sand, and it was dry.

In Clay County the Pure Oil Co. continued its success with a second test on the Henry Markle farm, Henry district. It is showing for 500,000 feet from the Big Injun sand at a depth of 1,889 feet. In Fayette County, Godfrey L. Cabot had a dry hole on the R. R. Huddleston farm in Falls district.

The Chartiers Oil Co. drilled No. 5 on the Daniel Huffman heirs farm in Center district, Gilmer County, in the Maxon sand at 1,368 feet and has a fair gasser showing for 750,000 feet. In Jackson County, the Heck Oil Co. completed a test on the Andrew L. Click farm in Union district to a depth of 4,042 feet and in the Corniferous lime, or the so-called Niagara lime. There was a showing of gas in the Brown shale below the Berea sand at a depth of about 3,000 feet which may be utilized. There was no showing of oil in any of the sands drilled.

In Kanawha County there were three completions, all in Cabin Creek district. Here, the Winifrede Co. completed two wells on its own property, No. 11, showing for a fair gas well, and No. 12, somewhat smaller. The United Fuel Gas Co. completed its No. 4,277 on the Sunday Creek Coal Co. tract and has a gasser producing in excess of 500,000 feet a day.

Marion County

In Marion County, the Sutton Brothers drilled their second test on the C. A. Thomas farm deeper to the Bayard sand and at a depth of 3,218 feet and have a gas well. This is in Mannington district. In Marshall County the Manufacturers Light & Heat Co. completed No. 3,463 on the William and A. Archer farm in Cameron district. It is a gasser at a depth of 2,925 feet.

Mingo County reported two completions. On the waters of Cub Branch of Marrowbone Creek, Warfield district, the Dixon Oil & Gas Co. completed a test on the Harvey tract at a depth of 3,125 feet with a resulting 300,000-foot gas well. In Harvey district the Wayne United Fuel & Gas Co. completed No. 34 on the Richard Vance farm at 2,650 feet. It is showing for 500,000 feet a day.

In Monongalia County the Pittsburgh & West Virginia Gas Corp. drilled its No. 5,078 on the Phillip Shuman farm deeper to 2,976 feet and in the 30-foot sand. It tested for close to 1,000,000 feet and is in Battelle district. A local syndicate drilled a test on the M. V. B. George farm in McElroy district to a depth of 1,890 feet and through the Big Injun sand. The top of the Big Injun sand was found at 1,723 feet with a show of gas at 1,762 feet, but the well is being abandoned on account of the poor showing. In Butler district, Wayne County, the Chartiers Oil Co. completed a second well on the Anna Streuber farm in the

Niagara lime at 4,303 feet, and it will make a small gas well.

Drilling in West Virginia

In spite of recent setbacks, Calhoun County continues active with the following drilling noted: In Washington district, Wiseman & Jackson have a rig standing on the Elizabeth J. Boothe farm, and part of the material on the ground on the Albert Wilson farm. In Sherman district the Hope Natural Gas Co. has spudded in and started drilling No. 7,518 on the Ella Shaffer farm, and C. B. Lewis and others are rigging up on the B. E. Summers farm. The Mid-Penn Oil Co. is shut down testing for gas at 2,210 feet in its test on the Chess Poling farm, same district. In Lee district, Ed Smith and others have reached 1,400 feet on the John Evans farm, and the Rocksdale Oil & Gas Co. is down to 1,005 feet on the Roy Starcher farm. F. F. McIntosh has the material on the lease for a third well on the Fox and Morgan tract, Lee district. In Center district, B. J. Crawley is drilling on the Florence Pell farm and is down to 1,810 feet. Park Bowser has a fishing job at 1,670 feet in his second test on the W. H. Jackson farm, and the United Fuel Gas Co. has a rig standing for No. 4,279 and on the Tell McDonald farm. L. P. Bickel has spudded in on the Louis Bennett farm, Center district, and Creed Barker and others are at 925 feet on the St. Paul Church lot. W. H. Bickel has a rig standing for a third well on the John Starkey farm, and has made a location for a fourth well on the John D. Collins farm, both in Center district, and Godfrey L. Cabot a location for No. 3 on Scott Umstead farm, same district. In Sheridan district, the United Fuel Gas Co. is testing for oil at 1,500 feet on the Ida Shroyer farm, and has made a location for a second well on the same farm. W. W. Dailey and others have a rig standing on the J. O. Mills farm, and have cleared a location on the Rome Bowers farm. In the same district, R. C. Waggoner and others have made a location on the J. H. Hayhurst farm.

In Roane County the Parsons Oil & Gas Co. is drilling on the E. E. Rader farm in Curtis district and is at 1,805 feet. In the same district the deep test of the United Fuel Gas Co. has reached 6,085 feet on the J. M. Hinzman farm, and a location has been made on the A. J. Paugh farm by the Reedy Oil & Gas Co. for a second test. In Spencer district, the test of Paul Weekley and others on the Gay M. Sergent farm is shut down at 1,650 feet, and the Ohio Valley Gas Corp. has the material on the ground for its No. 15 on the R. M. Jennings farm. The same is true of the Heck Oil Co.'s No. 5 on the H. W. Allen farm in Reedy district. In Smithfield district, the United Fuel Gas Co. is down to 5,005 feet in its old No. 1,645 on the Presley Vineyard farm which is being drilled deeper.

SOUTHWEST PENNSYLVANIA

Southwest Pennsylvania showed three completions for a week's work, two gas wells and one small oil producer. In Robinson Township, Allegheny County, the Lorish Oil & Gas Co. completed No. 3 on the C. F. Lorish farm in the Gordon sand for an estimated 1-bbl. pumper.

In Perry Township, Greene County, the Equitable Gas Co. completed a test on the Stacy Stephens farm in the Bayard sand at a depth of 3,354 feet. It will make a gas well. In Pine Township, Allegheny County, Miller & Co. got a small gas well in a test on the Enders heirs farm.

SOUTHWEST TEXAS

(Continued from Page 42)

plete at a little below 4,000 feet. Two wells have been completed at that depth and another was reported on the sand last week and two others have joined them this week. From the Saxet's No. 1 Donnegan on the east, which was completed the middle of last year at 4,091 feet for 1,550,000 feet of gas and 10 bbls. of oil, to the O. C. Best and others' No. 1 Boory on the west, setting casing at 4,070 feet after testing gas and oil on drill stem, the distance is about 4½ miles. In between them is the Houston Oil Co.'s No. 1 Joe Hunter, completed for 200 bbls. at 4,079 feet last December, and the Moody-Seagraves Producing Co.'s No. 1 Sedwick which last week set casing after getting a good showing of oil at 4 097 feet. The Houston Oil Co.'s No. 2 Ran Morgan is in the group. It set casing a couple of weeks ago after getting a showing at 4,095 feet.

Possibility of a lot of oil production from deep sands in the Saxet area west of Corpus Christi is thus apparent. There is the 4,300-foot stuff in the south edge of the Saxet Field as evidenced by No. 6 Dunn which came in for 250 bbls. and with the No. 7 Dunn down to the same horizon and feeling for the sand.

Three-quarters of a mile south of No. 7 Dunn is the Saxet Oil Co.'s No. 1 Donnegan, a small well at 4,091 feet, mentioned above, and a mile west of it No. 1 Joe Hunter, a 200-bbl. oil well at 4,079 feet, and now three other wells down to the same sand and with showings of oil and either with casing set or fixing to set casing, and extending as to the 4,000-foot sand over a distance of 4½ miles east and west. If they all come in producers at the same time it will be one of the biggest shows ever pulled off in Southwest Texas.

In July, 1930, R. A. Thompson drilled his No. 1 Harrell, a quarter of a mile south of where the Houston Oil Co.'s No. 1 Joe Hunter is now located. At 1,735 feet it blew out and ran wild and was lost and later he completed his No. 2 Harrell at 1,659 feet for 20,000,000 feet of gas. That was the first production found in that district and the shallow sand has not since been developed although the Houston Oil Co. completed its No. 1 Ran Morgan in the shallow sand. There are four sands now proven in the Saxet area on the south side of Nueces Bay. The shallowest at around 1,650 feet, next the producing sand in the Saxet Field at around 2,400 feet, next that at around 4,000 feet and one producer and another on the sand at 4,300 feet.

The breadth and extent of the possibilities of that area is also shown by F. P. Zoch's No. 1 Baldwin, a big gas well at 2,408 feet in the discovery and producing gas sand of the Saxet Field. It is 2½ miles south of the most northern gas well in the Saxet Field producing from that sand.

A field akin to that at Refugio with a multiplicity of sands is thus a possibility and with many factors indicating probability.

Balcones Fault East

Along the Balcones Fault zone east of San Antonio there is some new activity especially up through eastern Bastrop, Lee and Burleson Counties and on northeast in the direction of the new East Texas play. The idea is that possibly the line of production heads off in that direction. Some major companies have lately bought acreage in eastern Bastrop and independents have been active up in that district. Humble Oil & Refining Co. bought quite a block a couple or three miles east and a little north of the town of Bastrop in Bastrop County. Sun Oil Co., Red Bank and others were in that country before. Red Bank Oil Co.'s lease on a block with a drilling obligation expired January 1 but was extended for a period. Its block is in eastern Bastrop and northeast of the Humble block.

One of the contributing factors seems to be the renewed interest and belief that there will be some more Edwards lime pools extending from the Bruner Pool in eastern Caldwell on to the northeast due to the small well made by Mills and others in their No. 1 McMahon 6 miles northeast of the nearest production in the Joe Bruner Field, which seems to be producing from Edwards. They have made a location for a second test 50 feet east of the No. 1 and Neuhaus and others have made location for the No. 1 Moore, three-quarters of a mile northwest of the No. 1 McMahon. They are feeling around there for another Edwards lime pool. Ten miles northeast of them Turner, Whorton & Anderson's No. 1 Harris in Bastrop County had showings of gas at 437, 960 and 1,160 feet and is continuing to drill.

Edwards Plateau

In the Kerr-Real district Evans & Sprinkle's No. 1 J. M. Auld in Real County and 5 miles northwest of No. 1 Jeff Love, a producer, was down within a few feet of the contract depth at 4,000 feet as this story was being written. What they will do when they reach that remains to be seen. No. 1 Jeff Love produced at 3,391 feet and the other test was getting the same formations reasonably near the same depth so it has evidently passed up the producing sand of the Jeff Love. There was a lot of hope banked on this well. It was thought that its chances were better than No. 1 Jeff Love.

There are several other tests in that part of the country but they have been loafing along a little, waiting the outcome of No. 1 J. M. Auld and have not made a great deal of hole yet.

There is a new activity breaking out in Kerr County to the east of No. 1 Jeff Love, several miles, and with no connection so far as geology is concerned. No. 1 Jeff Love is in the extreme western part of the county. The city of Kerrville is in the center of the eastern half of the county. F. E. Waldrop has leased 5,000 acres 6 miles east of the town of Kerrville to start a test in 90 days. J. D. Pulliam has leased 15,000 acres in the county for an immediate test and Col. B. M. Hatfield has the rig on the ground for a test in the outskirts of Kerrville.

CALIFORNIA FIELDS

(Continued from Page 48)

tance of the field's allotment and is expected to be reduced to the permissible quota within the next few days. The Barnsdall Oil Co., which is developing properties in this field in conjunction with the Rio Grande, experienced a premature blowout when No. 14 Bell-Luton blew in and shot oil over the crownblock for a short period of time. This well was subsequently brought under control and work has been resumed on the fishing job which was under way when the blowout occurred.

The potentiality of this well, which is down 4,392 feet, will not be determined for some time as work is proceeding slowly. The significance which attaches to the performance of No. 14 Bell-Luton lies in the fact that it tends to indicate the probability that the Sespe, which underlies the present productive Vaqueros formation, may be found highly productive. This well, located rather far out on the structure in a topographic low, was definitely in the Sespe previous to the blowout but it is still unknown whether the gas originated in this formation. The amount of oil brought to the surface during this short blowout was practically negligible as the greater part of fluid consisted of water and rotary drilling mud. Barnsdall officials are not at all excited over the possibility of developing deeper production due to their conservative attitude and their realization for a long time that the underlying Sespe offered every indication of being found productive.

The General Petroleum, which is developing No. 1 Needham, a tideland project on Permit No. 55 in the Rincon Field of Ventura County, is rotating ahead in the oil sand at 2,945 feet in well No. 2. This is the first well to be drilled on this property as the first hole was a validation well undertaken to protect the permit. The Honolulu Consolidated's No. 2 on Permit No. 56, another tideland project, has just passed the 2,000-foot level. If operators were in a position to dispose of current production there would probably be several wells drilling in the Santa Barbara Mesa Field at the present time. The lack of pipe line facilities and distance from refining centers renders the disposal of production in the Santa Barbara Mesa Field a difficult matter.

Kettleman Hills

Drilling operations in the Kettleman Hills Field of Kings County have shown a perceptible increase during the past several weeks and a further gain is anticipated after the Kettleman North Dome Association begins functioning to the fullest degree. The association is proceeding slowly for the present as its policy with respect to offsetting work has not yet been definitely settled. Officials of the association are endeavoring to effect working agreements with operators developing fee acreage adjoining acreage of the association and this will consequently have a direct bearing on the location and number of wells to be drilled by the association. The Petroleum Securities suspended drilling operations on No. 3 Felix, a new well, at 6,861 feet, just after a string of 8⅝-inch pipe was landed on bottom. Work was suspended on this well due to the lack of a firm crude oil market and the prevailing low price being offered for Kettleman Hills crude at the well.

No. 2 Felix of the Petroleum Securities, completed a month or two ago, has consistently increased its daily production and is at the present time flowing 5,510 bbls. of 40.1 gravity oil per day. No. 1 Felix, the first well finished on this property, which was killed subsequent to the completion of No. 2, is rotating ahead in the Temblor gray sand at 7,385 feet. No. 1 Burbank of the Petroleum Securities in the Middle Dome of Kettleman Hills is in the brown shale at 5,488 feet, the hole being redrilled at the present time.

The Standard's test in the Middle Dome, No. 6, in Section 29-23-19, is rotating ahead in a gray sandy shale at 3,310 feet. The General Petroleum has advised the Kettleman North Dome Association that it will be impossible for it to comply with the latter's request that a production test be made on No. 2 Ochsner in Section 20-22-18 because of mechanical difficulties. The Union Oil Co.'s No. 17 Belridge in the North Belridge Field of Kern County is being recemented due to a defective cement job following a recent unsuccessful production test at 5,541 feet. A water which indicated water entering the hole at approximately 5,170 feet and a combination oil string will be set and cemented through perforations. The Shell Oil Co. is being delayed with mechanical trouble in No. 1 Williams, a deep test in the Semitropic section of Kern County, due to the loss of several stands of drill pipe which froze on bottom at 9,700 feet and subsequently twisted off. The Prairie Oil & Gas Co. has abandoned its No. 1 Capitan in the Capitan field of Santa Barbara County at 4,380 feet due to the unfavorable outlook. The top of the Vaqueros was encountered in this hole at 2,780 feet but it was found barren from top to bottom as was the upper few hundred feet of the underlying Sespe formation.

GULF COAST FIELDS

(Continued from Page 40)

the hole. Pressure of the well is 1,200 pounds and gravity of the oil 40.7 degrees.

This well is an east offset to Yount Lee Oil Co.'s No. 1 Miller, completion of which last December as a 1,200-bbl. well made the mile extension of the field. These wells are the only ones drilled in that particular area, being several thousand feet to the north of the Moss and Bordages wells of Union Sulphur Co. and Vacuum Oil Co., which are about a mile west of the main field. Yount Lee's Miller well has proved one of the best wells in the Lockport district and still is flowing steadily around 1,200 bbls. of fluid, 30 per cent water. It is a little lower in the sand than Vacuum's well, being at 6,706 feet. One other test is drilling, Vacuum's No. 7 State, offsetting Yount Lee west.

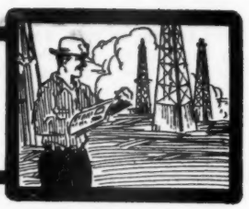
In addition to the fact that these wells have shown up better than wells in the main part of the Lockport Field, the difference in the oil also is of particular interest. Oil in the main field is Grade A and heavy Grade B coastal, while that in the new area is of light gravity.

ZANTE OIL FIELDS

NEW YORK, Mar. 30.—Zante Oilfields, Ltd., has been registered in London with nominal capital to take over the undertaking and all or any of the assets and liabilities of the Near East Petroleum Co., Ltd., and to acquire rights, grants, or other interests in oil fields and wells, and to conduct other petroleum enterprises.

CLASSIFIED WANTS

Read by Oil Men Everywhere



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THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

FOR SALE—EQUIPMENT

FOR SALE—2 No. 12 and 2 No. 11 Sweetland Filter Presses, some with monel leaves; 5 Sweetland Filter Presses, No. 9, No. 7, No. 2; 6 No. 4 Vallez Filters; 2 150 HP Fitzgibbons Boilers; 2 Skinner Unaflow Engines, direct connected to 2 200 KW Crocker Wheeler Generators, 125 to 250 volts. Installed three years; Miscellaneous Compressors, Storage Tanks, Pumps. Consolidated Products Company, Inc., 17-20 Park Row, New York City, Barclay 0600.

TANK CARS FOR SALE

8,000 gallons, for clean service. Inspection at our shop, Houston, Tex. Fifty ready for loading to any territory, giving free delivery to purchaser. sacrifice prices.
M. R. DUCEY
Box 223 Houston, Tex.

SLIGHTLY USED WESTCOTT and Foxboro Orifice Meters. Phone E. A. Herbig, 4-2191, Tulsa, Okla. Office, Hunt Bldg.

100 OIL and gas engines for sale. Superior, Reid, Franklin, Foos, Black Bear and Primm 15 to 80 H.P. in fine order; new models, low prices. Edward A. Schambs, Jr., Box 868, Wichita Falls, Tex. Phone 6356.

SIX-INCH Landis threading and cutting machine, 2½" to 6", in good condition. Can be seen in operation; $700. Subject to prior sale. Twin City Steel Mfg. Co., 2648 34th Ave., South, Minneapolis, Minn.

APPROXIMATELY

20,000 other men either are, or have been right where you are now, DID THEY SEE YOUR AD?

A few lines telling them what you want will produce better and quicker results under Equipment Wanted than waiting for the other fellow to advertise it.

Try it, there's a rate card at the top of this column, display classified rates are on the opposite page.

FOR SALE—EQUIPMENT

USED EQUIPMENT

For gasoline, production, pipe line and drilling branch of oil industry. Enormous stocks of equipment to choose from at minimum cost. Let us save you money by serving as a medium through which to buy and sell your used equipment.

OIL FIELD EQUIPMENT EXCHANGE
Mid-Continent Oil Companies
Official Clearing House

308 Ritz Bldg. Tulsa Phone 4-8168

HAVE SEVERAL DIAMOND CORE DRILLS FOR SALE AT A LOW PRICE. Suitable for structural or shallow drilling. Write Box E-433, The Oil and Gas Journal, Tulsa, Okla.

12" STANDARD - WIELAND PIPE MACHINE, Complete, Excellent condition. 32"x22" Bradford Lathe, 5⅞" hole in spindle; taper attachment. Complete. 12"x10' Ingersoll-Rand Type ER1 air compressor, motor drive, complete. Also large stock of other machine tools. Five hundred machines in stock. Send for catalog. Terms to responsible parties.
CINCINNATI MACHINERY & SUPPLY CO.
26 West Second St. Cincinnati, Ohio.

FOR SALE—One-fifth of one-eighth royalty in 80 acres undivided in 1,000 acres. Owned by the Texas Gulf Sulphur Co. at New Gulf, Tex. Woodlief Brown, 125 N. University St., Albuquerque, N. M.

TWO 5½ KEYSTONES fully equipped for 1,000 foot drilling for sale cheap. The Veeder Supply and Development Company, Cherryvale, Kansas.

PARKERSBURG FRICTION DRIVE steel frame drilling machine with up-to-date 4 cylinder Gas Drilling Engine and complete outfit of tools, all in A-1 condition. A bargain for cash. Located in Pennsylvania fields. Write Box E-451, The Oil and Gas Journal, Tulsa, Okla.

EQUIPMENT WANTED

WANTED—Used 35 h.p., 4-cycle Superior gas engines, complete with clutches, priced right and in good condition. M. & V. Tank Co., Wichita Falls, Tex.

GOOD USED PIPE
20 miles of 4" line pipe either weld or screw joint. Quote price f.o.b. your loading point. Box E-421, The Oil and Gas Journal, Tulsa, Okla.

WANTED TO BUY

Vogt Multitube 4-PH Oil Cooling System or equivalent, with spray nozzles. Advise condition, best price and location in first letter.
W. I. DENNY
618 West Lake Street Chicago, Ill.

150 HORSEPOWER BESSEMER gas engine and compressor with discharge of 100 pounds. Write Box E-450, The Oil and Gas Journal, Tulsa, Okla.

BUSINESS OPPORTUNITIES

DEEDED MINERAL interest spread covers 6 tracts one under 5,000 barrel well in Rusk County new field. Write for map. ¼ mineral rights 142 acres Bee County 1,200 feet from 450 barrel well $250.00 basis. 7,905.5 acres new 10 year paid up lease ¼ royalty same term Edwards County, Texas, in active line of play $1.25 acre. Stieren & Koenig, Alamo National Bldg., San Antonio, Texas.

INVESTORS ATTENTION
We will care for substantial holdings of leases or royalties on a retainer basis. Mid-Continent and New York offices fully equipped. Box E-434, The Oil and Gas Journal, Tulsa, Okla.

MUST drill offset wells Loving County, Texas, on entirely proven acreage. If interested write H. Freels, 1526 Birchwood Ave., Chicago, Ill.

LARGE drilling block in coastal plain of Arkansas. Geological survey shows 2,500 feet to Nacatoch sand. Write Box E-441, The Oil and Gas Journal, Tulsa, Okla.

BUSINESS OPPORTUNITIES

Am drilling on block of acreage with all merits of any East Texas block. Have A-1 equipment and don't owe a dime. Have enough money to pay labor and fuel but need casing. Will sell you some offset acreage to my well at $12.50 per acre, will use all the money to buy pipe. If my well is a producer you have made a fortune. If it is a dry hole, will pull pipe and sell it for your account. You will get at least half your money back. Can you beat this for fairness? Answer quick if you have the money or can produce the pipe. Can furnish best of reference.
Leonard Jones, Cliff Towers, Dallas.

CURTIS BROKERAGE COMPANY
dealers in
Used Oil Field Equipment
for
Drilling, Production, Gasoline and Pipe Line Departments.
List your surplus with us.
And advise us of your needs.
S. O. Curtis, P. O. Box 1214.
Seminole, Oklahoma.

EXTREME LOW DRILLING COSTS and gusher (up to 5,000 bbls.) production make Williamson County, Texas, serpentine plugs the best venture. $4,000 to $8,000. Covers entire cost of blocking and the drilling of the well. Inquiry solicited.
NICOLLE & NICOLLE
Geogologically Selected Drilling Blocks
P. O. Drawer 1720 Fort Worth, Texas.

JOBERT OIL DRILLING COMPANY offers fifty divided assignments interest nonassessable in drilling well on forty acre lease, mile and half from production Kilgore, Texas. Interest money back from first oil runs before company receives a cent. One thousand dollars per. Send money to Citizens Bank or 300 South Saunders St., Tyler, Texas. No stock or units but ownership interest. Total interest in seven-eighths lease one hundred. Jobert Petroleum Company, 300 South Saunders, Tyler, Texas.

MAKING geological and geophysical survey East Texas, Gregg-Rusk Counties, and further can furnish some royalties and leases; reliable connections solicited; very best of reference furnished. C. E. Deaton, 4th Floor First National Bank Bldg., Longview, Texas.

OIL located before drilling. Geophysical method. Toggodometer Instrument; take pay in oil. No oil, no pay, except traveling and testing expenses, 05 per cent accuracy. O. P. Coffin, Caddo, Tex.

FOR SALE—MAPS

OIL DEVELOPMENT maps, any county in Oklahoma, 75 cents each; lease block and detail maps. Write for map list. Lindsay Map Co., Franklin Bldg., Oklahoma City, Okla.

SOUTHEAST NEW MEXICO
MAPS
Send for list.
THE M. H. HUNTER CO.
Roswell, N. Mex.

HELP WANTED

DESIRE CONNECTION with producer who would be in a position to furnish 1,500 barrels of high-gravity, Mid-Continent crude per day, also to take financial interest in Canadian Refinery. Answer Box E-424, The Oil and Gas Journal, Tulsa, Okla.

ANNOUNCEMENT

Effective with the March 12 issue of The Oil and Gas Journal a new rate of 20 cents per line for the first insertion and 15 cents a line for each additional insertion applies on Position Wanted ads. If you are unable to locate the particular kind of work you are best fitted for, insert an ad of your own, telling of your qualifications. We will give you a box number and mail your replies to you without any additional charge.

POSITIONS WANTED

GEOLOGISTS, now employed, wishes change with independent operator on interest basis in East and Central Texas. Address Box E-432, The Oil and Gas Journal, Tulsa, Okla.

GRADUATE engineer, six years' experience, familiar with design of fractionation and distillation equipment, desires position with refining company as designing engineer or chief draftsman. Write Box E-436, The Oil and Gas Journal, Tulsa, Okla.

SCOUT AND LANDMAN. 15 years in Texas fields. Good references. Wide acquaintance with oil men. Experience in production and drilling. Go anywhere. Address Box E-440, The Oil and Gas Journal, Tulsa, Okla.

A MARRIED MAN, 33 years of age, who knows Diesel Engines, generators and motors, wants position with pipe line company or any concern needing a man with these qualifications. Address Box E-446, The Oil and Gas Journal, Tulsa, Okla.

NATURAL gas executive or superintendent for any department of the business. Eighteen years covering production, main line and distribution, both construction and operation, measurement, public relations and franchises and complete management. Good reasons for making change, best references. Desire permanent place with good future. Write Box E-443, The Oil and Gas Journal, Tulsa, Okla.

MIDDLE-AGED business man, just relieved from position on account of merger, will consider proposition from a reliable concern wanting office executive or business manager. Any legitimate line of business will be considered. Address Box E-444, The Oil and Gas Journal, Tulsa, Okla.

ORGANIZER, promoter, secretary-stenographer; thoroughly experienced, reliable, trustworthy gentleman, 39; personality, integrity, ability; with sedan (knowing all states), desires position (go anywhere). Address Earl Biechel, general delivery, Beaumont, Tex.

EXPERIENCED traveling foreign representative desires connection with responsible oil company in sales department, excellent references; available now. Write Box E-442, The Oil and Gas Journal, Tulsa, Okla.

PIPE LINE construction superintendent, long experience, especially in gas, desires position anywhere U. S. Have operating experience. Now employed. Good hustler, sober. Know costs all types, sizes lines, make up bids, etc. Best references. Age 35. Would be valuable man to new contractor. Write Box E-428, The Oil and Gas Journal, Tulsa, Okla.

GRADUATE engineer, with ten years' experience as an electrical metering engineer and field engineer and superintendent of electrical transmission, distribution, substation and telephone construction desires position either domestic or foreign. Will prove valuable asset to any oil or utility company. References furnished. Write Box E-448, The Oil and Gas Journal, Tulsa, Okla.

ATTENTION WILDCAT PROMOTERS
Standard drilling crew will contract their labor for interest, plus living expenses. Send proposition to Box E-447, The Oil and Gas Journal, Tulsa, Okla.

EDUCATIONAL—Years of field experience. Best fitted for SAFETY or other personal contact work. Employed now. Answer Box E-449, The Oil and Gas Journal, Tulsa, Okla.

RIGHT OF WAY and CLAIM MAN experienced desires position. University graduate. Furnish references. H. J. Conrad, 2547 West 12th Street, Oklahoma City, Okla. Phone 5-9532.

PRODUCTION AND GEOLOGICAL ENGINEER: 12 years' experience. Capable of directly supervising any production or drilling problem. Chief geologist and assistant to vice president of large company. Desires connection. References. Consider interest and salary proposition. Write Box E-452, The Oil and Gas Journal, Tulsa, Okla.

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Create and Build Sales

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20,000 to 30,000 Bbl. Well

I have acreage in NW 10-11-3, Oklahoma City field, big Wilcox area. Solicit inquiries from company or individual able to buy substantial interest in completed well. Write

Box 489, Shawnee, Okla.

OIL LEASES AND ROYALTIES
Bought and Sold.
In the Hobbs Pool,
Lea County, N. Mex.
A. L. Gurley, Clovis, N. Mex.
P. O. Box 211 Phone 392.

FOR SALE: 5,000 acres oil and gas leases on structure, settled production. Royalties and mineral rights on large tract. Complete data furnished on application. W. P. Harley, Bowling Green, Ky.

MINERAL DEEDS—LEASES
Mineral deeds under major company leases or accompanied by leases. Stevens-Morton County area, Ness-Trego-Gove area in Kansas and Beaver-Texas Counties, Oklahoma area.
J. W. SAIN
310 Brown Building
Wichita, Kansas.

LEA AND ROOSEVELT COUNTIES
New Mexico, 1/64th interest perpetual mineral deeds under Major Oil Co. 160-acre leases. Price $25. Active areas. Roy G. Barton, Avalon Hotel, Clovis, N. Mex.

CHOICE leases, royalties and drilling blocks in the hottest spot in East Texas; Nacogdoches, Shelby, St. Augustine, Angelina Counties; some small tracts worth the money. Box 427, Nacogdoches, Tex.

WEST KENTUCKY Oil and Gas Leases. All picked leases on proven structure. Big Gas Wells flowing. Oil wells 10 cents per acre with 10 cents rentals per acre. W. S. Lowery, Paducah Star Route, Marion, Ky.

OIL leases and royalties ahead of the drill. Buy while they are cheap. Washita and Custer Counties. Get my prices.
J. J. Sallaska & Son, Corn, Okla.

NEW MEXICO leases; Lea, Eddy, and Chaves Counties. H. T. Orcutt, 1016 Colcord Bldg., Oklahoma City, Okla.

DRILL THE OTHER FLANK OF SABINE UPLIFT opposite new East Texas fields. Significant similiarity. Dollar Oil—No proration—Cheap Leases—Cheap Drilling. Write Charles G. Bennett, Bernhardt Bldg., Monroe, La.

OIL Crane County bargain, 20 to 160 acres fee by owner, Sec. 18, Blk. 28. 201 Ewell Nalle Bldg., Austin, Texas.

EAST TEXAS LEASES and Royalties. Near C. M. (Dad) Joiners new Enterprise. Wonderful opportunity. A. L. Farrell, Grand Saline, Texas.

DRILLING BLOCKS East and West Texas. Also leases, royalty and production. Anderson, Linz Bldg., Dallas, Tex.

EAST TEXAS leases and royalty in the trend. Price right. Frank Poorman, 206 Andrews Bldg., Dallas, Texas.

TO RELEASE

20,000 acres oil and gas land in proven field between Cut Bank and Pondera Field. Well defined structure.

W. B. Hoerr,
Cut Bank,
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EAST TEXAS OIL LEASE and 128th Royalty on forty-three acres eastern edge Pure Block, Wood County, now core drilling. Surrounded by blocks now forming with drilling contracts and bonus priced $10 for lease, $10 for royalty, both for $15, subject to prior sale.
Box 242,
Mineola, Texas.

LEASES—PRODUCTION

LEASES IN EAST TEXAS HOT PLAY

Near ten wells, low prices, maps free. Brokers wanted.
L. P. Jones, Cliff Towers,
Dallas, Texas.

ROYALTIES—PRODUCTION

FIND OUT FIRST!

In whatever phase of the oil business you may wish to invest—Leases, Production, Natural Gas, Royalties—it is a good plan to "find out first."

Avoid costly mistakes and disappointment.

Unless you are trained by education and experience to judge values and possibilities, you may need the guidance of those who are so educated and trained.

Such service is at your disposal; we are thoroughly equipped, with trained men here and in the field, and with the necessary plant and equipment, to give you reliable appraisals based upon known Geological and development conditions, of any producing or potential oil or gas property—no matter where located.

NATURAL GAS & PETROLEUM
RESEARCH CORPORATION
122 East 42nd Street,
NEW YORK CITY.

EAST TEXAS ROYALTIES—Gregg, Rusk, Cass, Marion, Harrison Counties. Big list. Harry Haynes, Grantville, Kans.

OKLAHOMA OIL ROYALTIES
Royalty Sales Company
Suite 523 105 N. Clark St. Chicago.

EAST TEXAS ROYALTIES—Gregg, Rusk, Cass, Marion, Harrison Counties. Big list. Harry Haynes, Grantville, Kans.

DRILLING STARTING in Kilgore Townsite; 1/128th. land owners royalty in two tracts; in edge of Kilgore; $100. Act quick if you want in this royalty division. Guy J. Stumpff, Con. Eng., Box 404, Kilgore, Texas.

EAST TEXAS ROYALTIES on geology head of production with wildcats drilling close. Sensible prices and individual direct deeds. See maps and geology and pick your own play. Wells drilling make promptness important. R. R. Fisk, 1214-C. Wichita Falls, Tex.

ROYALTY ON STRUCTURE, vast spread under drilling well now spudding northeast of Rusk, Gregg area, on theoretical shore line, near Sinclair big block Harrison County, East Texas. Between Moncrief Bateman and Caddo Field, being around 15 miles west of Caddo area. Many wells to start in Harrison. Investors, brokers in Canada and U. S. write or wire James R. Haynes, Grantville, Kans.

WRITE ME
For the Right Kind of Producing
OIL ROYALTIES
I Have Them
John L. Dickson, Box 1037, Tulsa, Okla.

BEDROCK ROYALTY PRICES ahead of drilling on major company blocks. $6 per square mile. Perpetual deeds and title warranty. Clearly stated and understandable interests. See maps and bulletins. R. R. Fisk, Box 1214-B, Wichita Falls, Texas.

ROYALTY IN OKLAHOMA CITY field under producing and drilling wells. Phillips leases. Royalty in Nacogdoches and many other East Texas counties, also Kansas. For brokers and investors. James R. Haynes, Grantville, Kansas.

FOR SALE: Perpetual deeded oil royalty, located in the great potential oil fields of Lea County, New Mexico. Also 5-year oil and gas leases. Prices reasonable. Terms easy. Possibilities great. Monarch Inv. Co., Roswell, N. Mex.

ROYALTIES—PRODUCTION

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FOR ROYALTIES

We maintain a complete organization in New York, and in Tulsa (with reliable connections in other oil field centers) for the handling of all kinds of Royalty transactions—buying, selling, investigating.

Your requirements will be given our careful and considerate attention.

We are members of the Mid-Continent Royalty Owner's Association, and we enthusiastically support the Association's code of ethics.

THE LAND & ROYALTY
CORPORATION

37th Floor CHANIN TOWER,
NEW YORK

Postal Telegraph Wire in our Office.
Telegraph Address: "CDX NEW YORK"

ROYALTIES—Sure they move slow. Nothing but actual bargains are selling. I'm not wasting my time with anything else. The fellow who makes money is the one who isn't swayed by the crowd. So, for royalties that are selling now write J. B. McAnally, Hunt Bldg., Tulsa, Okla.

MID-CONTINENT OIL ROYALTIES at reasonable prices and with assurance of safety. Past record "Chicago dealer since 1920" indicates quick return of principal and handsome profit. Write me. J. A. Wolf, 208 South LaSalle St., Chicago, Ill.

ROYALTIES in HOT SPOTS, Kansas, Oklahoma and Texas, under drilling wells, offsets, core drilled structures, under Major Co. Blocks, for the small or large buyer. Fast, reliable and dependable service for investors and brokers, in United States and Canada. Special offerings in the Ritz high gravity Major pool in McPherson County, Kansas, on Shell Block, under drilling wells, under drilling well Greenwich area Sedgwick County, Kansas, Shell block, Gaines County, Texas, under the Texas Pacific Coal & Oil Co. well now drilling, northeast of Hobbs pool, on 2,503 acres. Many others. Send today for latest list and maps. James R. Haynes, Grantville, Kansas.

EAST TEXAS ROYALTY POOL

Headright plan. Immense spread in one investment. Permanent royalty estate. Safest, soundest royalty investment ever devised. Look no further. Get particulars from:

EAST TEXAS PRODUCTION
COMPANY,
Dallas National Bank Building.
Dallas, Texas.

TEXAS ROYALTIES

If you require a connection that will enable you to deal in Texas Royalties with the same confidence you would have if you were on the ground yourself, write

J. F. MARION OIL COMPANY,
Magnolia Bldg.,
Dallas, Texas.

$12.50 BUYS DEED part oil, 2 oil royalties City Pool. Ed Milam, Dept. E, Oklahoma City, Okla.

WANT ROYALTIES on structure from Range 7w to 8e and from T. 5n to 17n. Only bargains considered. R. J. Hill, R. 4, Tulsa, Okla.

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The rate for Classified **Display** Advertising set in similar style to this Ad or in two Column style is as follows for each insertion:

1 inch	1 Time	$5.00
1 inch	13 Times	4.50
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One point borders and ten point capitals are allowed, larger type not accepted.

Changes in copy must be in our office 10 days in advance of publication date.

Mail your advertisement to the Largest Classified Section in the Oil Industry.

THE OIL AND GAS JOURNAL
TULSA OKLAHOMA

ROYALTIES—PRODUCTION

FOR SALE
½ Royalty 8½ SE¼ 31-13-4E Lease and ½ R. in SW¼ of NE¼ of Sec 14-14-4E; ¼ Royalty on N½ NW 3-14-4, Lincoln County. Write Box E-437, The Oil and Gas Journal, Tulsa, Okla.

ROYALTY BARGAINS in Oklahoma, Lincoln and Pott Counties for sale. American Inv. Co., 201 Elks Bldg., Oklahoma City, Okla.

ROYALTIES ahead of drilling wells, major company, core-drilled structures. Write William Hallam, Jr., 214 Patterson Bldg., Denver, Colo.

EAST TEXAS royalties and leases ahead of production in trend of development. Wire or write for latest offerings or tell us what you want. Wm. T. Earnest & Co., Wilson Bldg., Dallas, Tex.

OPPPORTUNITY—$25 buys 1/512 landowners royalty in tract near production; Rusk County, Texas, field. Lewis De Geurin, Box 112, Overton, Tex.

ROYALTY RECORD

Form shows rental record, mortgage record, expenditures, sales record, tax record, well record, monthly production record. All on one sheet; size 8½"x11"; punched to fit standard ring binder. Convenient for desk or brief case. Sheets—$5 per 100; fine leather binder, $5.25; leather tabbed index, $1.20. Order this complete record today. Know what you own and its condition.

E. L. STECK CO.
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Tulsa, Oklahoma.

TURN TO PAGE 111 FOR ADDITIONAL CLASSIFIED ADS.

East Coast Market Shows Weakness

Reflection of Reactionary Developments in Mid-Continent and California Areas. Gasoline Cut and Other Prices Shaded

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Mar. 30.—Reactionary developments in the Mid-Continent and California markets for crude oil and products have brought about a corresponding weakening in the East Coast market position, and the price trend in the East during the past week was definitely lower. The posted price for gasoline was cut one-half cent per gallon, price shading on other products became more general, and a cut of 10 cents per barrel or more in the posted price for Diesel oil is looked for.

Standard Oil Co. of New York took the leadership in the latest cut in the refinery market in this area, announcing a half-cent reduction on U. S. Motor on March 24. A number of other marketers followed in this reduction, and, while some refiners have not cut their "official" prices and are quoting as high as 8 cents per gallon, the "going price" on practically all of the current business is now down to 6½ cents.

The debacle in domestic crude oil markets, which has been paralleled by ridiculously low prices quoted on some grades of Rumanian and Russian refined products in export markets, has thoroughly demoralized export markets for American refined products, although it is understood that Canadian buying of United States crudes has picked up substantially since recent price cuts. East Coast refiners, discouraged by the rapid sequence of unfavorable developments during the past month, which have virtually nullified all of the constructive changes made earlier in the year, confess themselves at a loss as to the immediate outlook, and pending further developments there is a pronounced tendency to "mark time," and to hold down refining operations to a minimum in the interim.

Refinery Gasoline

The action of Socony in initiating a downward movement in the refinery gasoline market during the past week came somewhat as a surprise to the trade, although other refiners were not slow in following the New York company in cutting, in actual sales if not in posted schedules. Eastern refiners had been anticipating a downward movement, but Socony has not hitherto played a prominent part in the tank car market and initial action from that quarter was most unexpected.

Notwithstanding refinery curtailment in the East Coast area since the first of the year, gasoline stocks have continued on the increase from week to week recently and selling pressure from some quarters has been by no means infrequent.

The barge market is still the hotbed of competition locally, and reports of offerings of U. S. Motor gasoline in barge lots at as low as 5⅞ cents per gallon are reported. This quotation is as low as the laid down price of California or Gulf Coast gasolines locally, and indicates the extreme softness of the current market position. With local sellers willing to go this low in spot sales, however, it is evident that there is little to fear from any heavy movement of outside gasolines into the local market.

Jobbers have not been slow to take advantage of the current weakness in the gasoline situation, and in booking gasoline for forward delivery independent marketers are making extreme demands upon refiners in many instances. Refiners are reluctant to go back to any of the old and condemned methods of marketing, but are keeping in unusually close touch with the situation to protect their interests against any "sharp" competition which may develop.

At the time of writing, Atlantic Refining, Socony, Continental, Gulf, Sinclair and Tide Water are the "low" sellers in the posted market, but other refiners are meeting the inside figure in their current business and a general lowering to the 6½-cent posted basis is anticipated.

Tank Wagon Gasoline

The break in refinery gasoline prices has brought about an unsettled tone in the tank wagon market, and an early lowering of posted schedules throughout the territory is looked for.

Consumption of gasoline is holding up well and weather developments have been favorable for motoring during the past week, but the eastern area is very much oversupplied both with wholesale and retail marketers, and the outlook for the coming summer season is much less favorable than was the case earlier in the year.

Retail price schedules are far from uniform in many sections of the territory, and the old stock phrase "meeting local competition" is expected to be heard frequently during the coming season in explanation of numerous local price revisions.

There are three major marketers operating in this territory now who were not in the eastern market three years ago, and under much less favorable conditions in wholesale and retail markets at this time the intensified competition is bound to have its effect upon earnings of marketing units.

Diesel Oil

Competition in Diesel oil sales is becoming more pronounced, and it is not believed that the present posted quotation of $1.85 per barrel can be maintained for long. An early reduction, probably bringing the market down to the basis of $1.75, is looked for in this area.

Consumption of Diesel oil has been well maintained, but foreign competition in Diesel oil has become so pronounced that refiners operating in this territory are believed to be planning steps to preserve their marine sales from foreign aggression.

Most of the marine Diesel oil business handled from this port is along contract lines, and any cut in the posted price will be immediately made effective on these contracts, which protect buyers both against price declines and against price advances beyond a certain point.

Bunker Oil

The posted price for bunker "C" fuel oil remains unchanged at $1.05 per barrel in bulk, f.o.b. refinery terminals. The pending reduction in Diesel oil prices, it is expected, will not extend to the bunker fuel oil market, although the undertone in the latter division of the trade has softened somewhat in sympathy with lower prices quoted by refiners at the Gulf and in California.

Sales of bunker oil locally thus far in the year compare favorably with 1930 totals, and refiners expect that their aggregate gallonage for the full year 1931 will at least come up to last year's totals. However, California sellers during recent months have cut into eastern refiners' sales to some extent by taking several large contracts for fuel oil for eastern utility companies and it is believed that henceforth eastern refiners will meet all competition of this type to hold their "home" business.

The fuel oil market is weak both at the Gulf and in California, but in view of current charter rates and low selling prices here, it is not expected that any substantial quantities of fuel oil from these sources will find their way to the open market in the East, although it is probable that eastern refiners will bring in fuel oil from California and the Gulf for deliveries on contracts, supplementing their own production.

Since the start of the year, East Coast refinery holdings of gas and fuel oil have recorded substantial declines, stocks as of March 21 totaling 7,180,000 bbls., as compared with holdings of 9,601,000 bbls. as of January 3 this year.

Gas Oil

The posted price for 28 plus recycled oil continues unchanged at 5¼ cents per gallon, but this figure has been entirely nominal for some months past, with the bulk of the business going through at 4¼ to 4½ cents per gallon in tank car lots at the refineries.

Gas oil consumption has been well maintained, with gas manufacturing companies drawing stocks in substantial volume, but notwithstanding material reductions in refinery holdings here, selling pressure has been a continued feature and maintenance of the posted price has been an impossibility.

Kerosene

In sympathy with the drop in refinery gasoline, the kerosene market has developed further softness this week. The recently reduced posted price of 6 cents per gallon has not fully readjusted the market to changed conditions, and a number of sellers are booking spot refinery business at 5¾ cents per gallon for 41-43 water white kerosene in tank car lots.

There have been no changes in posted tank wagon kerosene prices during the week, but the market tone is easier and unless a pronounced increase in consumption develops within the next few weeks, it is expected that a general cut of 1 cent per gallon will be witnessed throughout the territory.

Lubs

Some irregularity has developed in the cylinder oil market during the week, reflecting the holdings of Pennsylvania refiners. Bright stocks do not appear to be in large supply at producing points, and the market this week is a half cent per gallon higher on both the light and dark, at 26 and 24 cents per gallon, respectively.

Other grades, however, have yielded further to selling pressure, and 600 steam refined is quoted a quarter cent lower at 16¼ cents per gallon; 630 Pennsylvania flash off 1 cent at 26 cents per gallon; and 600 Warren E and 600 Oil City E also down 1 cent per gallon at 20 cents and 19 cents, respectively.

Demand for red and pale oils has been rather sluggish throughout the week, but refiners have made no price changes on these oils.

Export inquiry for cylinder stocks has picked up a little during the week, and domestic buyers are also showing more interest in offerings, with the local trade looking for an early price recovery on most grades.

Paraffin Wax

Price changes have been lacking in this division of the market during the week, but the market tone continues easy, and it would probably be possible to shade quoted prices fractionally on a firm bid for wax in any quantity.

Domestic consumers continue to adhere rigidly to a hand-to-mouth buying policy, and export operators, while interested in wax for nearby delivery, are tendering bids so much below the market that refiners are not inclined to do business at the moment.

Furnace Oil

With the close of the season for domestic heating oils in sight, the market has turned definitely weaker, and some sellers are reported going under posted prices in current sales.

The tank car market, however, remains unchanged with leading sellers quoting 4½ cents per gallon for 32 gravity oil in tank car lots.

Marketers are expected to announce their contract prices for tank wagon deliveries of furnace oil for the 1931-32 season within the next few weeks and current reports indicate that these quotations will be fractionally under the current season's levels on some grades. Refiners are holding off the naming of their prices as long as possible, hoping for some settlement of the crude proration problem and adjustment of the East Texas situation before determining the prices at which they plan to do business a year hence.

Petroleum Exports

A substantial recovery in export movement of refined products, notably lub oil and refined petroleum, developed in the local market during the week ended March 21. In as much as this increase was not prefaced by any gain in activity in the local "open market," it is assumed in trade circles that the heavier shipments last week were due to deliveries made by some of the large integrated companies to their foreign marketing subsidiaries.

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Mar. 21	Mar. 14	Mar. 7
Gasoline	605,000	230,000	400,000
Naphtha	500,000	290,000	975,000
Kerosene	49,000	115,000	40,000
Fuel oil	44,000	275,000	20,000
Lubricating oil	2,285,000	830,000	2,970,000
Petroleum, refined	3,320,000	608,000	475,000
	Pounds		
Petrolatum	35,000	53,000	75,000
Paraffin wax	1,515,000	1,520,000	3,175,000
Refined			25,000
Scale	250,000	315,000	1,335,000
Lubricating grease	1,000,000	500,000	1,050,000

It is still very much a buyers' market on refined products for export, but there are indications that the decline in spot values has about run its course, and sellers are showing more of an inclination to reject the unusually low bids which buyers have been tendering on some products. A development of this sort normally presages a price recovery and operators here are viewing the outlook for the second quarter of the year with more optimism, notwithstanding disturbed conditions prevailing in crude oil and refined products markets in many sections of the country.

Export Market

No cargoes were reported placed in the open market at the Gulf during the week, and prices on gasoline for export from that point were more or less nominal. A leading British factor, who moved considerable quantities of gasoline out of the Mid-Continent last year, is reported in London cables to be offering Navy gasoline at the Gulf at 4¼ to 4½ cents per gallon and 64-66 gravity, 375 endpoint gasoline, at 5⅛ to 5¼ cents a gallon. It is extremely difficult to establish an accurate market at the Gulf in view of prevailing dullness, and according to some sellers, gasoline which has been offered out at extremely low prices at the Gulf during recent weeks has been off grade.

Quiet trading in kerosene is likewise reported at the Gulf, the market being nominally quoted at 4¼ cents for prime

white and 5¼ cents for water white, with no cargo business being done.

Slackness was also reported in the California export trade during the week; in so far as open market transactions were concerned, and there were no cargoes of either Venezuelan or Mexican crudes reported placed during the period.

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended March 21 totaled 1,946,000 bbls., a daily average of 278,000 bbls., compared with 1,594,000 bbls., a daily average of 227,714 bbls. for the previous week and a daily average of 257,964 bbls. for the four weeks ended March 21. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
Baltimore	185,000
Boston	119,000
New York	1,071,000
Philadelphia	240,000
Others	285,000
Total	1,900,000
Daily average	271,429
At Gulf Coast Ports—	
Tampa	46,000
Total	46,000
Daily average	6,571
At all United States Ports—	
Total	1,946,000
Daily average	278,000
Daily average four weeks	257,964

Distribution of total imports is as follows:

Crude	1,026,000
Gasoline	243,000
Fuel oil	677,000

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended March 21 totaled 220,000 bbls., a daily average of 31,429 bbls., compared with 508,000 bbls., a daily average of 72,571 bbls. for the previous week and a daily average of 49,750 bbls. for the four weeks ended March 21. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
New York	220,000
Total	220,000
Daily average	31,429
At Gulf Coast Ports—	
All ports	None
At Atlantic and Gulf Coast Ports—	
Total	220,000
Daily average	31,429
Daily average four weeks	49,750

Distribution of total California oil receipts is as follows:

Gasoline	220,000

Shipments of refined products from California for eastern markets during the week (with identity of owner of tanker moving the oil where such owner is an oil company) were as follows:

To Bayonne, N. J.—129,700 bbls. of gasoline on the Tamiahua (Richfield Oil Co. of California).

To Perth Amboy, N. J.—80,000 bbls. of gasoline on the Dilworth.

To Philadelphia—114,000 bbls. of gasoline on the Northern Sun (Sun Oil Co.).

To Baltimore—80,800 bbls. of gasoline on the Antietam and 72,800 bbls. of Diesel oil on the Beaconlight (Colonial-Beacon Oil Co.).

Charter Market

No transatlantic business is quoted in the tanker market and trading the past week was again confined to the Black Sea, which continues fairly active, say Funch, Edye & Co., Inc., in their weekly market summary. Owners appear to be endeavoring to outbid each other for business and rates, consequently, are being forced to lower levels. A large carrier (last cargo whale oil) is prepared to clean and accept 7/- Gulf/U.K.-Continent, April. Several parcels of clean space are available for April loading at cheap rates, but charterers are not being attracted. Two lubricating oil carriers were taken from the Gulf to French Atlantic and London for April loading. There are still indications of business for Black Oil carriers from the Gulf or vicinity to U.K./Continent, May loading, but charterers are not inclined to operate. It is also reported that three clean carriers have been fixed for dirty cargoes from the Black Sea. The American coastwise and intercoastal markets were again inactive with no fixtures reported.

Fixtures during the week were as follows: It Stmr Antares, 3,500 tons maximum, gas oil, Constanza to Bizerta and Oran 9/6, option Adriatic 8/- one, 8/6 two ports, April 20/5 May.

Nor Stmr Bisca, 8,000 tons—10 per cent, clean, 2/3 voyages Black Sea to Odessa, 3/6, March.

Br M/S Longwood, 8,000 tons part cargo, clean, Constanza to two ports Continent, 7/-, April.

Nor M/S Sommerstad, 7,800 tons cargo, clean, Black Sea to U.K./Continent, 7/-, April.

It Stmr Luisiano, 3,300 tons cargo, clean, Constanza to French Mediterranean, 10/3, May.

Nor M/V Drafn, 10,500 tons cargo, clean, Black Sea to Continent, 7/-, April.

Ger Stmr Schwarzes Meer, 4,500 tons cargo, lubricating oil, Houston to London, pt., April 5/25.

Nor Stmr Jenny, 5,000 tons, lubricating oil, Gulf to French Atlantic, 13/-, canceling May 15.

ROCKY MOUNTAIN AREA

(Continued from Page 43)

102, to 3,035 feet in 1925 and had an initial open flow of 80,000,000 feet of gas per day. This company next drilled its No. 2 Emerald on the SW NW NW, Section 21-2n-102, had some gas and water in the Dakota, gas in the first Morrison at 3,550-64 feet, and found water in the Sundance at 3,926 feet. It was plugged back and completed as a gas well. Midwest Refining Co. drilled two wells in the SE SE, Section 30-2n-102, had 50,000,000 feet of gas in the Dakota at 2,958 feet in the first well and lost the second hole at 3,473 feet. Standard Oil Co. of California had in 1921 drilled a test to the Morrison at 3,825 feet and in 1926, Tide Water-Associated Oil Co. started a well in the SE cor., Section 24-2n-103, which was drilled to 4,800 feet where the hole was lost after finding water in the Sundance, but failing to reach the Weber sandstone.

California Co.'s No. 1 California-Raden will start in a 24-inch hole and will be drilled with a combination rotary rig of the latest type. It probably will end up with the 9-inch. A 138-foot derrick will be erected and a new type of Deisel-electric power unit will be used, the first in this part of the country. California Co. will finance the test and be in charge of the drilling. The principal holdings on the structure are held by California Co., Texas Production Co., Associated Oil Co., Raven Oil & Refining Co., and A. C. McLaughlin.

Moffat County

Midwest Refining Co.'s No. 7-M Parkinson, NW NW, Section 23-4n-92, Iles Dome, a producer in the Morrison which was deepened to the Sundance, was completed at 3,478 feet, 1 foot in the Sundance. It was estimated at 100 bbls. of oil and 15 bbls. of water per day. It will be put on production for a 30-day test. Midwest's No. 24 Hannewalt, NE SE SE, Section 4-6n-92, Bell Rock Dome, the discovery well on that structure which came in with a flow of 30,000,000 feet of gas a day in the Mesa Verde at 2,867 feet last une, finally has been completed after having much trouble in shutting off bottom water. It was drilled to 3,040 feet where it tested 35,000,000 feet with a pressure of 1,020 pounds, with 100 bbls. of water. The tools were in the hole and the water gave considerable difficulty. It was plugged back and cemented a number of times. The 8⅝-inch is now cemented at 2,840 feet. Some gas came back at 2,851-54 feet when the plug was drilled out and this increased at 2,854-55 feet. The last gauge showed 559,400 feet of very dry gas in 24 hours. It is being allowed to blow through a 2-inch valve to clean itself and bring back the gas. Mountain Fuel Supply Co.'s No. 2 State, Tract 37-12n-100, Hiawatha Dome, is rebuilding rig which burned when gas at 2,202 feet became ignited.

Larimer County

Standard Oil Co. of Colorado's No. 1 Hertha, NW cor., Section 21-4n-69, Berthoud Dome, which showed for a commercial well in the Muddy at 3,743-92 feet, has not yet been completed and tested, but is held up with the tools, swab and part of the cable in the hole. Same company's No. 1 Hall, NE cor., Section 20-4n-69, an offset to the west of the Hertha well, is spudding at 280 feet, and its No. 1 Wilson, NW cor. SW, Section 21-4-69, is spudding. Its No. 1 Gillette, NW cor. NE, Section 21-4-69, is building rig, and its No. 2 State, C NW, Section 16-4-69, is building rig.

Morgan County

Indian Territory Illuminating Oil Co.'s No. 1 State, C NE NE, Section 16-1n-57, Fort Morgan anticline, is shut down at a total depth of 4,090 feet repairing rig damaged by fire.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, C S half NE, Section 7-4s-66, near Aurora, is drilling at 5,762 feet in shale and lime shells. This is the first new hole made since operations stopped to cement the 6¼-inch at 5,670 feet to shut off caving. The hole was filled back to 5,700 feet and 60 bags of cement used. A shutoff was secured and the drilling is in a dry hole. At 5,735 feet this test had a good show of green oil, about 7 bbls. being bailed. The shell breaks continue to show puffs of gas.

Adams County

Nettie M. Slatt's No. 1 Hills, SE cor., Section 27-3s-64, Watkins district, is drilling at 2,650 feet in shale showing streaks of lime.

Jefferson County

Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor., Section 24-4s-69, near Denver, is drilling at 3,868 feet in hard rock.

Baca County

A. R. Jones Oil & Operating Co.'s No. 1 Boice Cattle, NW NE, Section 22-34-42, Miles Cam structure, is drilling at 4,790 feet in sandy lime. It had a hole full of salt water at 4,730-50 feet and more water at 4,775-85 feet.

Montezuma County

The test heretofore reported drilling 5 miles southwest of Cortez in Montezuma County by G. H. Talcott and others, is located in the NE cor., Section 7-35n-16w, near the entrance to McElmo Canon. It spudded in a 10-inch hole to go to approximately 1,000 feet and is drilling at 350 feet. Ringle Brothers have the contract.

WYOMING

A fatal accident occurred in the Billy Creek Field in Johnson County, Wyoming, the past week when Ralph W. Loucks, superintendent of the Rocky Mountain division of the Carter Oil Co., was killed by a rock which struck him on the head. He was directing some dynamiting operations on the company's lease when an explosion hurled the stone into the air. Death was instantaneous. Mr. Loucks had lived in Casper with his family for the past 12 years and had a host of friends who were grieved by his sudden demise.

Converse County

Ohio Oil Co.'s No. 5 Jones, NW NE NE, Section 9-33-76, on the apex of the Big Muddy Field, which was being deepened from the Wall Creek sand to test the Lakota, will make a good producer from the last named horizon. The 6⅝-inch was cemented on top of the sand at 4,345 feet and the core drill was working in the sand 2 feet below the top when the hole gave indications of breaking loose and cleaning itself. The drill pipe was pulled but the core was lost. A swabbing test was then made and it swabbed 250 bbls. in eight hours and lowered the oil 3,800 feet. The well was allowed to stand two hours and in that time it again filled to within 800 feet of the top. It is possible that cable tools will be used to drill into the sand. The Big Muddy produces mostly from the Wall Creek sands at 3,200 to 3,400 feet. Midwest Refining Co. drilled one well down to the Lakota and found production in both the Dakota and Lakota. Continental Oil Co. also has one producer in the Lakota. Continental has a

(Continued on Page 122)

CLASSIFIED WANTS

(Continued from Page 109)

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AMERICAN INDUSTRY NEEDS MORE NATURAL GAS

START CODE HEARING AT WASHINGTON, D. C.

WASHINGTON, D. C., Mar. 31.—The Federal Trade Commission today began its hearing on the request of the American petroleum industry to set aside its order withdrawing its approval from the national code of practices for marketing refined petroleum products. Chairman Hunt referred to requests from independents to be heard on the same subject and Edward H. Hilp and William F. Burke of the Independent Producers Association were told they would be heard. W. R. Boyd, vice president, American Petroleum Institute; Roy B. Jones, chairman of the southwest committee; Edward S. Hall, Standard Oil Co. of New Jersey, and Henry L. Stevens of the Standard of Indiana addressed the commissioner.

Mr. Boyd, executive vice president of the Institute, told the commission there was tremendous waste in oil industry through system of loaning or leasing gasoline pumps, tanks and other equipments through leasing agent system.

He quoted from figures compiled from a study of 46 miles of the Boston Post Road in which he showed there were 205 important stations, 51 company-owned stations and 55 leased a total of 311 stations with 1,035 gasoline pumps. Estimated monthly sales of these stations was 1,682,700 gallons and the total investment required was $4,535,728.

Mr. Boyd described development of the rules established by American Petroleum Institute to serve as a code of ethics for the oil industry. He said rules had been submitted to the Department of Justice and the only rule objected to was one compelling leasing agents to handle only products of company leasing the property.

Judge McCullough of the commission pointed out there have been many violations of rules especially by big companies in leasing of oil stations. Boyd said a large part of violations were due to ignorance of the meaning of the rules.

A number of rules have been revised it was explained to prevent unfair trade practices.

Late Fields

(Continued from Page 32)

the 24-hour gauge on account of a shortage of tankage.

Mote & Wheelers' No. 1 Stafford, NW cor. NE Section 32-17-4, Lincoln County wildcat, found a hole full of water in the Bartlesville sand at 3,975-4,050 feet, and is underreaming the casing.

Production from the Oklahoma Field for the 24 hours ending 7 a.m. March 31 was 58,748 bbls. from 66 wells, with a total of 752 wells completed in the field. The gauge is one of the smallest reported during the month.

Phillips Petroleum Co.'s No. 1, SE cor. NW SW SE Section 3-11-3w, flowed 778 bbls. of oil the first 30 minutes and was shut in. It was the initial gauge on the well which is producing from the Wilcox sand at 6,294-6,418 feet, with a total depth of 6,422 feet.

SITUATION IMPROVED IN ALLEGANY FIELD

PITTSBURGH, Pa., Mar. 28.—The Pennsylvania Grade Oil conservation board at a meeting here authorized the Allegany County (New York) district to adjust production to meet an increased demand for crude. The board also reported indications of an improved general situation throughout the Pennsylvania Grade producing field.

"It developed there was a demand for more crude in the Allegany County, New York, district," the board reported, "and the Allegany County board was authorized to adjust production so as to supply local refineries' demands in such manner as to continue the present balance between production and consumption."

A program of 50 per cent curtailment was put into effect last May 16 in the Allegany-Bradford Field where pressure methods are used. This program will continue in the Bradford Field as will the 30 per cent curtailment program in the fields to the south which embrace western Pennsylvania, eastern Ohio and West Virginia.

In this regard, the board members reported that, while it was deemed "necessary and essential to maintain the present production basis in all other districts. they looked upon the Allegany situation as being indicative of an improved general situation throughout the Pennsylvania Grade production area."

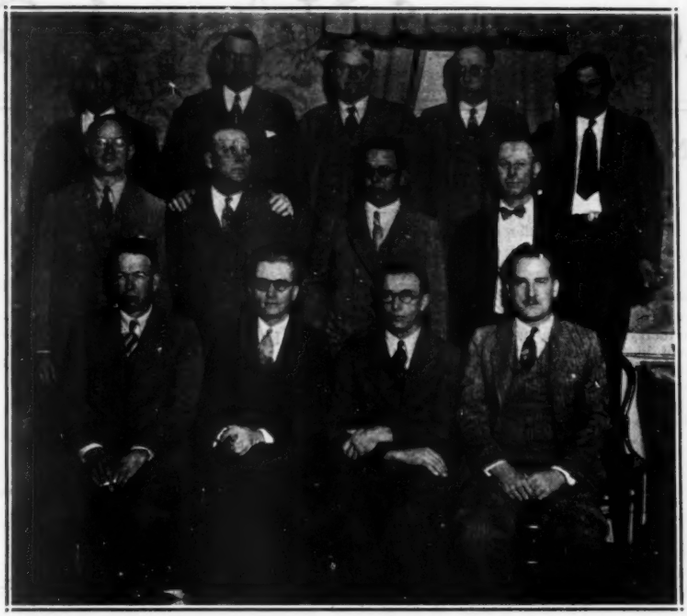
The present production throughout the area is between 53,000 and 54,000 bbls. daily, board members said.

Every district except Titusville was represented at the meeting. Forrest Dorn, Bradford, is chairman of the board.

DAVID WHITE STRICKEN

David White, senior geologist of the United States Geological Survey and curator of paleobotany for the Smithsonian Institute at Washington and who suffered a stroke several weeks ago, is reported as improving. His right side was paralyzed by the stroke.

SAN JOAQUIN CHAPTER HEARS KETTLEMAN PAPER



Officers and advisory committee members of the San Joaquin Valley Chapter of American Petroleum Institute, Division of Production. Top row, left to right: W. C. Cameron, Southern California Gas Co.; W. J. Schultz, Willmax Oil Co.; E. R. Pratt, Honolulu Oil Corp., Ltd.; J. B. Wells, Kern Sunset Oil Co.; and W. R. Allen, Shell Oil Co. Middle row, left to right: E. P. Campbell, Standard Oil Co.; G. I. Keniston, Standard Oil Co.; J. J. Wilt, Standard Oil Co.; and G. E. Holmes, Lakeview Oil & Refining Co. Bottom row, left to right: R. R. Shinn, General Petroleum Corp., chairman; C. L. Moore, Chanslor-Canfield Midway Oil Co., vice chairman; P. C. McConnell, Standard Oil Co., vice chairman; and M. W. Morris, Standard Oil Co., secretary-treasurer. Advisory committee members absent from the group are: M. S. App, General Petroleum Corp.; D. B. Collins, Shell Oil Co.; L. E. Foust, Associated Oil Co.; and R. L. Keyes, The Texas Company.

LOS ANGELES, Calif., Mar. 28.—At the March meeting of the San Joaquin Valley chapter, A.P.I. division of production, held in the Standard Section 14 Recreation Hall, Taft, Calif., despite inclement weather, there was a large attendance of members and interested oil men. "Operation of North Dome Ketleman Hills Oil Field Under the Unit Plan," was the subject of a paper prepared by A. H. Bell, director of the Ketleman North Dome Association.

Mr. Bell stated that the expected productive area of the North Dome is about 16 miles long and 2⅝ miles wide, embracing an area of 21,200 acres. Of this, 10,800 acres will be operated by the North Dome Association, 9,460 acres of fee land will be operated by the Standard Oil Co. in co-operation with the association, and 940 acres will be operated by companies who have refused to join the association to date. The unit plan agreement is for the life of the field and goes into effect on April 1, when all wells, buildings, water lines, etc., will be turned over by members to the association for operation as a unit. Members will be credited with the oil and gas produced and charged with the drilling and operating expenses by the association in proportion to the ratio that their acreage bears to the total. A few edge wells will be started this summer by the association and Standard Oil Co. in order to define the productive limits of the field.

H. C. Eddy, chief engineer for the Petroleum Rectifying Co. in Los Angeles, delivered a paper on "Emulsions and Their Treatment." When oil and water are associated in an emulsified form, the water will not separate from the oil on standing due to the fact that the water droplets are surrounded by a tough membrane which prevents coalescence. It is generally believed that emulsions are not formed in the formation but are the result of severe agitation of oil and water in pumping equipment or at the bean, in case of a flowing well. It is cheaper to produce emulsions and treat them by patented processes rather than try to prevent their formation, if a loss in production results from such an effort. The more important processes which are employed to treat emulsions are distillation, centrifugal, chemical, and electrical.

SAFETY MEN SEE FIRES EXTINGUISHED QUICKLY

Demonstrations of fire-extinguishing equipment were provided for members of the Kansas-Oklahoma chapter of the Petroleum Safety Council who attended the monthly meeting of the chapter in Tulsa Friday, March 27. The demonstrations, conducted by W. L. Walker, of the American Fomon Equipment Co., Tulsa, and assistants, were held on the grounds of the International Petroleum Exposition following a luncheon at which Mr. Walker was host.

In the first demonstration gasoline covering a tub of water was ignited. Application of Lux gas, which is carbon dioxide, extinguished the flames which belched from the tub and from the ground around it almost instantly. Similar results were obtained when gasoline leaking from a suspended bucket was ignited. This latter demonstration, Mr. Walker explained, was designed to show the effectiveness of carbon dioxide as a fire-fighting agent in cases where it is impossible to shut off burning gasoline which may be leaking from a tank, still, valve or pipe line.

In the absence of Don Wallace, president of the Kansas-Oklahoma chapter, the meeting, held in the assembly room of the Mid-Continent Oil and Gas Association, was presided over by Louis Hodell, of the Carter Oil Co., vice president.

JOHN WALDO, WRITER OF OIL MARKET NEWS, DEAD

John B. Waldo, staff correspondent in Chicago for The Oil and Gas Journal, died in his home in that city last Saturday, March 28, his death bringing to a close an interesting career as newspaperman and trade journal writer and publisher. Mr. Waldo, who was born in Chicago August 28, 1859, was employed as a young man on the old Chicago Inter Ocean, in its day one of the country's leading newspapers. His assignments

John B. Waldo

covered a wide range, from minor news happenings to grand opera and politics.

Leaving daily newspaper work, Mr. Waldo was one of the organizers of the Fairchild publications in the apparel field and in the next few years he knew the struggles of the small printer and publisher in Chicago and in Battle Creek, Mich. He then became editor of Oil News. Next he became associated with the Oil, Paint and Drug Reporter, the Chicago Journal of Commerce and The Oil and Gas Journal. For several years Mr. Waldo's time had been devoted almost exclusively to the last-named publication, and his weekly market letter in The Oil and Gas Journal was read by thousands. He leaves his wife.

Mr. Waldo was an honorary life member of the Chicago Press Club.

HEADS LOUISIANA COMPANY

NEW YORK, Mar. 31.—J. C. Hilton, purchasing agent for Standard Oil Co. (New Jersey), has been elected president of Standard Oil Co. of Louisiana, succeeding D. R. Weller who becomes chairman of the board of the Louisiana company. Mr. Hilton left here last night for Baton Rouge to take up his new duties.

ITALY'S GUSHER SETTLES

NEW YORK, Mar. 30.—The oil gusher recently brought in at Fontevivo, Italy, has settled down to a production of 30 tons per day, according to reports from Rome. Crude produced from the discovery well at Fontevivo, which is expected to prove the existence of a substantial pool, is high in gravity and is being refined at Fidenza. Four other tests are being put down adjacent to the discovery well at Fontevivo.

Manufacture of Natural Gasoline

Pressure Process Uses Less Gas to Make Carbon Black

By increasing the pressure on the gas going to the burners, in the manufacture of carbon black, increased yields of a high-grade material will result, according to A. W. Francis of Arthur D. Little, Inc., as outlined in a paper presented before the American Chemical Society at Indianapolis, Ind., during the past week. In summarizing this paper he said:

"The best grades of carbon black are made by burning hydrocarbon gases with a continuous flame. The yields are seldom over 3 per cent because the upper inflammability limits of the hydrocarbons are so low that an excess of oxygen is always present to consume most of the carbon. Stifling the flames is futile. Since an increase in pressure raises the upper inflammability limits, such higher yields of carbon black can be obtained by burning hydrocarbons continuously in an atmosphere of compressed air. Yields of high-grade carbon black have been trebled at 100 pounds pressure in small-scale equipment, and computations have been made indicating that this can be increased much more. The process also permits utilization of the heat of combustion of the gas."

The pressure process is of interest to gasoline manufacturers since it will tend to increase the value of the residue gas at such times the supply of gas is small or the consumption of carbon black is greater than production, but on the other hand it will also mean that only one-third the volume of gas will be needed to supply a given amount of carbon black.

In discussing the new pressure process, Doctor Francis said:

"With natural gas at its present low price in the carbon black fields, the yield of carbon black is not economically important. It is cheaper to burn five times as much gas to produce a given output than to install a process such as is here described. As the supply of gas begins to diminish, however, and as the network of pipe lines to cities becomes more extensive, the price of natural gas will rise considerably, and increased yields will become increasingly important.

"This process will economize on gas still further, in that by using the hot compressed exhaust gases in an expansion engine, an excess of industrial power is made available, which otherwise would require the direct combustion of the gas in gas engines or under boilers. In other words, the heat of combustion of the gas in a carbon black plant can be utilized."

SIGNAL TAKES U. S. PLANT

Signal Oil & Gas Co., which recently purchased the two refineries of the United States Refining Co. at Hynes and Torrance, Calif., from Exeter Oil Co., has taken over the natural gasoline plant of the company at Torrance. This plant has a daily capacity of 25,000 gallons.

HOLLY DISMANTLES PLANT

Holly Oil Co. of Colorado Springs, Colo., has dismantled its natural gasoline plant at Huntington Beach, Calif. This company is operating as a producer only at present as its refinery at Huntington Beach, Calif., is also shut down.

GATES PLANT DISMANTLED

The natural gasoline plant of Gates Oil Co., Ardmore, Okla., in Section 15-4s-3w in the Healdton Field has been dismantled.

NATURAL GASOLINE ASSOCIATION ANNOUNCES NEXT ANNUAL PROGRAM

The program of the 1931 annual convention of the Natural Gasoline Association of America has been announced by Ray Miller, secretary, and includes papers of interest to all branches of the industry. The convention will again be held in Tulsa and will cover the three-day period from May 19 to May 21. The program of the first day includes the reports of various committees which will then be followed by papers of interest to executives dealing with marketing problems particularly.

The second day will be devoted to papers of special interest to plant managers and operators and Thursday's program will include those subjects of most interest to technical men. The Natural Gasoline Supply Men's Association will again supply free lunches for those attending the convention and will also provide entertainments which will be announced later.

Tuesday, May 19, 1931
10:30 a.m.

Welcoming address—Frank L. Chase, Lone Star Gasoline Co.
President's address—Dr. E. R. Lederer, Texas Pacific Coal & Oil Co.
Appointment of nominating committee.
Report of active standing committees: (1) Gas contract committee—Chairman T. R. Goebel; (2) standardization committee—Chairman George P. Bunn; (3) technical committee—Chairman R. C. Alden; (4) specifications committee—Chairman E. W. Zublin; (5) sales managers committee—Chairman A. T. Scherer; (6) gas testing committee—Chairman George P. Bunn; (7) aviation committee—Chairman R. C. Alden; (8) standard forms committee—Chairman A. H. Menuet.

Afternoon Session

Prepared Economics Round Table Discussion.
Mid-Continent:
1. "Production and Transportation of Natural Gasoline"—F. E. Rice, Phillips Petroleum Co.
2. "The Natural Gasoline Situation from the Standpoints of the Natural Gas Pipe Line and Carbon Black Manufacture"—W. E. Reardon, Columbian Gasoline Corp.
3. "The Marketing Outlook for Natural Gasoline"—D. E. Buchanan, Hanlon-Buchanan, Inc.
California:
1. "Production, Transportation and Markets of Natural Gasoline in California"—W. W. Robinson, Jr., The Texas Company.

Wednesday, May 20, 1931
10:30 a.m.

(The program for this day has been especially arranged to be of interest to plant managers and operators.)
"New Developments in Plant Processes and Equipment"—G. M. Davidson, Empire Oil & Refining Co.
Discussion by E. A. Wooden, Sinclair Oil & Gas Co.
"Plant Management Kinks"—Jack Power.
"The Disposal of Residue Gas"—D. C. Williams, Continental Oil Co.
Discussion by D. A. Sillers, Lone Star Gasoline Co.

Afternoon Session

"A Resume of the New Specifications for Natural Gasoline"—R. C. Alden, Phillips Petroleum Co.
Discussion by Dr. George G. Brown, University of Michigan.
"Fractionation Control"—S. S. Smith, Shell Petroleum Corp.
Discussion by W. G. Hiatt, Phillips Petroleum Co.

Thursday, May 21, 1931
10:30 a.m.

(The program for this day has been especially arranged for technical consideration.)
"The Status of the Liquefied Petroleum Gas Industry"—G. G. Oberfell, Phillips Petroleum Co.
Discussion by W. G. Watkins, Skelly Oil Co.
"Motor Fuel Developments"—Dr. George G. Brown, University of Michigan.
Discussion by G. G. Oberfell, Phillips Petroleum Co.

Afternoon Session

"The Refinery, from the Natural Gasoline Man's Viewpoint"—Emby Kaye, Skelly Oil Co.
"The Determination of the True Vapor Pressure of Liquids and Its Value to the Petroleum Industry"—E. J. Squire, Shell Oil Co.
"Vapor Recovery in the Refinery"—speaker to be selected by the Western Petroleum Refiners Association.

EAST TEXAS GASOLINE PLANTS

FORT WORTH, Tex., Mar. 30.—The Sinclair Oil & Gas Co. has an experimental gas lift plant in operation on its W. W. Holland lease in the Joiner Field, and probably will construct a casinghead plant at a later date to process gas from the company's wells and adjoining wells, using the residue gas for raising production in the wells if such method is found to work satisfactorily in the smaller plant. The Magnolia Petroleum Co. is also planning a casinghead plant in the Kilgore Field on its Crim lease in the Sevier Survey, and will process gas from this lease as well as adjoining leases held by other producing companies.

TWO PLANTS DISMANTLED

Union Oil Co. of California has dismantled its 10,000-gallon natural gasoline plant at Copeland lease, Huntington Beach, and its 500-gallon unit on the Torrey lease in the Ventura Field.

SUTTON PLANT SHUT DOWN

The small natural gasoline plant of Sutton Bros., Inc., in Hancock County, West Virginia, has been shut down.

California Natural Gasoline Production Declines February

Natural gasoline production in California decreased during February to 53,771,000 gallons compared with 64,165,282 gallons in January. Part of this is accounted for in the shorter month but there was also a decrease in the daily average production during February of 3,558 bbls. daily. One hundred and thirty-one plants operated and processed 2,671,275,000 cubic feet of gas.

Utilization of natural gasoline, including shipments, amounted to 1,530,858 bbls., an increase over January of 180,381 bbls. Daily average utilization of 54,674 bbls. was 8,950 bbls. more than daily average production of 45,724 bbls.

Stocks of natural gasoline at the end of February amounted to 1,397,851 bbls., of which 57,032 bbls. were reported by natural gasoline plant operators and 1,340,819 bbls. by refinery operators. This is a decrease of 173,754 bbls. under January stocks. This stock figure of 1,397,851 bbls. is approximately 25½ days' supply at the current rate of consumption.

CALIFORNIA NATURAL GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS
February, 1931
Production by Fields

	Gas treated (1,000 cu.ft.)	Natural gasoline produced (gallons)
Fullerton and Whittier	788,723	1,707,749
Midway	1,823,014	3,106,765
Huntington Beach	558,542	1,731,628
Kettleman Hills	10,976,512	11,746,078
Long Beach	6,381,076	12,291,704
Richfield	435,760	576,008
Santa Fe Springs	6,799,062	9,927,272
Seal Beach	781,706	1,232,128
Ventura Avenue	4,655,542	4,424,310
All other fields	5,084,350	7,027,361
Total	38,284,287	53,771,003

Production by Methods

Type of plant—	Gas treated (1,000 cu.ft.)	Natural gasoline produced (gallons)
Oil absorption	38,117,313	53,570,130
Compressor	166,974	200,873
Total	38,284,287	53,771,003

Finished gasoline at plants, 23,123 bbls.

Distribution

		Bbls.
Stocks first of month		1,571,605
Produced during month		1,280,262
Quantity mixed with crude or unfinished oils	Bbls. 73,307	
Used in blending at refineries	994,400	
Shipments	463,151	
Stocks end of month	1,397,851	
Balance		76,842
	2,928,709	2,928,709

Stocks

	Gallons	Barrels
Natural gasoline held by natural gasoline plant operators	2,395,336	57,032
Natural gasoline held by refineries	56,314,398	1,340,819
Total	58,709,734	1,397,851

TWO UNITS CONVERTED

Signal Oil & Gas Co. of California is now operating two of its natural gasoline plants as booster stations. One of these, with daily capacity of 15,000 gallons, is located on Block F&G of the company's Los Angeles County tract, and the other, with a daily capacity of 11,000 gallons, is on Farm Lot 78, American Colony tract, in the same county. The company has shut down its 2,000-gallon plant on its Tract 2,200 in Los Angeles County.

RANCHO BREA DISCONTINUES

Rancho La Brea Oil Co., which has operated a 5,000-gallon daily capacity natural gasoline plant at Los Angeles, has ceased operations and the site is being subdivided.

The
HAMER
All Steel
ROTARY HOSE

Now Sells For Less *Money
Than Any Other All Steel Hose

OVER 200 IN USE

THE Hamer All Steel Rotary Hose has been in use in Mid-Continent fields for over a year. Over 200 Hamer hoses are now in use under the most severe conditions encountered in oil fields. NOT ONE HAMER HOSE HAS EVER BEEN RETURNED FOR REPAIRS. Why experiment? Order the Hamer Hose and have the best.

ABSOLUTE FLEXIBILITY

IN a Hamer joint there is a lack of friction and there are no threads or bolts to cause trouble. Flexibility is obtained by joining the steel castings together with a high-grade standard make of Steel Balls. This not only holds the two together but at the same time presents an unexcelled bearing of exceedingly long life.

This type of construction allows an opening through the joint considerably larger than the pipe, thus permitting an unobstructed flow of fluid.

There Are 7 Joints In The Hamer Hose. Why Be Satisfied With Less?

Hamer Oil Tool Co., Ltd.
2911 Cherry Ave., Long Beach, California

Mid-Continent Distributors
Iverson Tool Company, Tulsa, Oklahoma
The Thrift Corp., Houston, Texas

*Write For Our New Prices. They Will Be A Pleasant Surprise.

HAMER Hydraulic All Steel Rotary HOSE

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

OKLAHOMA (Group 3)—	Mar. 31		Mar. 24		Mar. 17	
50-52 450 endpoint	.03½	.03¾	.03½	.03¾	.03½	.03¾
56-58 450 endpoint	.03⅝	.03¾	.03⅝	.03¾	.03½	.03¾
58-60 437 endpoint (U. S. Motor)	.03½	.04	.03½	.04	.03½	.04
60-62 437 endpoint	.03½	.04	.03½	.04	.03½	.04
60-62 400 endpoint	.03⅝		.03¾	.04¼	.03⅝	.04¼
64-66 375 endpoint	.04⅛	.04½	.04¼	.04½	.04¼	.04½
68-70 360 endpoint	.04½	.04¾	.04½	.04¾	.04½	.04¾
64-66 437 endpoint (blend)	.03¼	.03¾	.03¼	.03¾	.03¼	.03¾
NORTH TEXAS—						
50-52 450 endpoint	.03¼	.03½	.03¼	.03½	.03½	.03¾
58-60 450 endpoint	.03¼		.03¼		.03¼	
58-60 437 endpoint (U. S. Motor)	.03⅝	.03¾	.03⅝	.03¾	.03⅝	.03¾
60-62 400 endpoint	.03½	.04	.03⅝	.04¼	.03¾	.04¼
64-66 390 endpoint	.03¾	.04¼	.03¾	.04¼	.03⅞	.04¼
64-66 375 endpoint	.04	.04¼	.04⅛	.04¼	.04⅛	.04¼
68-70 360 endpoint	.04½	.04¾	.04½	.04¾	.04½	.05
64-66 437 endpoint (blend)	.03¼	.03½	.03¼	.03½	.03¼	.03½
*NORTH LOUISIANA—						
58-60 437 endpoint (U. S. Motor)	.03¾	.04	.03¾	.04	.03¾	.04
*ARKANSAS—						
58-60 437 endpoint (U. S. Motor)	.03¾	.04	.03¾	.04	.03¾	.04
PENNSYLVANIA—						
52-54 Naphtha	.05½	.05½	.05½		.05¾	
54-56 Naphtha	.05¼	.05½	.05¾		.05¾	
58-60 Gasoline	.05½	.05¾	.05¾	.06	.05¾	
60 Gasoline	.06		.06	.06¼	.06	
62 Gasoline	.06¼		.06	.06½	.06	
64 Gasoline	.06⅝	.06¾	.06¼	.06¾	.06¼	.06½
68-70 350 endpoint gasoline	.07		.07		.07	
CALIFORNIA—						
†54-58 437 endpoint (U. S. Motor) domestic	.04	.05	.05	.06	.05	.06
†58-62 400 endpoint domestic gasoline	.06	.08	.07	.09	.07	.09
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.03¼	.03½	.03¼	.03½	.03½	.03⅝
56-58 450 endpoint	.03⅝	.03¾	.03⅝	.03¾	.03½	.04
58-60 437 endpoint (U. S. Motor)	.03½	.04	.03½	.04	.03½	.04
60-62 400 endpoint	.03⅝	.04	.03⅝	.04	.03¾	.04¼
64-66 375 endpoint	.04¼	.04½	.04¼	.04¾	.04¼	.04¾
64-66 437 endpoint (blend)	.03¼	.03½	.03½	.04	.03½	.04
68-70 360 endpoint	.04½	.04¾	.04½	.04¾	.04⅝	.05
GULF COAST (Export)—						
58-60 U. S. Motor	.04½	.05	.04½	.05	.04½	.05
60-62 400 endpoint	.04¾	.05	.04¾	.05	.04¾	.05
61-63 390 endpoint	.05⅜	.05⅝	.05⅜	.05⅝	.05⅝	
64-66 375 endpoint	.05½	.06	.05½	.06	.05⅞	.06

*Louisiana, Arkansas, Mississippi and East Texas delivery. †For local consumption.

NATURAL GASOLINE

OKLAHOMA (Group 3)—	Mar. 31		Mar. 24		Mar. 17	
Grade A, 72-79.9, 375 e.p., rec. 90%	.02⅝	.02¾	.02⅞	.03	.03	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.02⅝	.02⅞	.02⅝		.02¾	
Grade B, 76-83.9, 375 e.p., rec. 85%	.02¼		.02⅜		.02½	
Grade BB, 84-92, 375 e.p., rec. 85%	.02⅛	.02¼	.02¼		.02⅝	
Grade C, 80-92, 375 e.p., rec. 78%	.02	.02⅛	.02¼		.02¼	.02⅜
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.02⅝	.02¾	.02⅞	.03	.03	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.02⅝	.02⅞	.02¾		.02¾	
Grade B, 76-83.9, 375 e.p., rec. 85%	.02¼		.02⅜		.02½	
Grade BB, 84-92, 375 e.p., rec. 85%	.02⅛	.02¼	.02¼		.02⅝	
Grade C, 80-92, 375 e.p., rec. 78%	.02	.02⅛	.02¼		.02¼	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.02⅝		.02¾		.03	
Grade BB, 84-92, 375 e.p., rec. 85%	.02¼		.02⅝		.02½	
Grade C, 80-92, 375 e.p., rec. 78%	.02⅛		.02½		.02½	
CALIFORNIA—						
75-78 375-390 endpoint	.04½	.05½	.04½	.05½	.04½	.05½
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.02⅝		.02⅞	.03	.03	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.02⅝		.02⅝		.02¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.02⅛		.02⅜		.02⅝	

BURNING OIL

OKLAHOMA (Group 3)—	Mar. 31		Mar. 24		Mar. 17	
41-43 water white kerosene	.02⅝	.03	.02⅝	.03	.02¾	.03
42-44 water white kerosene	.02¾	.03⅛	.02¾	.03⅛	.02⅞	.03⅛
NORTH TEXAS—						
41-43 water white kerosene	.02½	.03	.02½	.03	.02½	.03
40-41 water white kerosene	.02⅝	.02¾	.02⅝	.02¾	.02⅝	.02¾
*NORTH LOUISIANA—						
41-43 water white kerosene	.03	.03¼	.03	.03¼	.03⅛	.03¼
*ARKANSAS—						
41-43 water white kerosene	.03	.03¼	.03	.03¼	.03⅛	.03¼
PENNSYLVANIA—						
43 Kerosene prime white	.04½		.04½		.04¾	
45 Kerosene water white	.04⅝	.04¾	.04⅝	.04¾	.04¾	.04⅞
46 Kerosene water white	.04¾	.05¼	.04¾	.05¼	.05	
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04¾	.06	.04¾	.06	.04¾	.06
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.02⅝	.02¾	.02⅝	.02¾	.02¾	.03
42-44 water white kerosene	.02¾	.03	.02¾	.03	.03	.03⅛
GULF COAST (Export)—						
41-43 prime white	.04¼		.04¼		.04¼	
44 water white	.05¼		.05¼		.05¼	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

OKLAHOMA (Group 3)—	Mar. 31		Mar. 24		Mar. 17	
Below 18 gravity Fuel Oil, per bbl.	.37½	.45	.40	.45	.40	.45
18-22 Fuel Oil, per bbl.	.40	.45	.42½	.50	.42½	.50
20-22 Fuel Oil, per bbl.	.42½	.47½	.45	.55	.45	.55
22-26 Fuel Oil, per bbl.	.50	.60	.50	.60	.50	.60
24-26 Fuel Oil, per bbl.	.55	.60	.57½	.62½	.57½	.62½
26-30 Fuel Oil, per bbl.	.57½	.67½	.62½	.67½	.62½	.67½
28-30 Fuel Oil, per bbl.	.62½	.70	.67½	.75	.67½	.75
32-36 Gas Oil (industrial)	.01½	.01⅝	.01⅝	.01¾	.01⅝	.01¾
32-36 Gas Oil (straw color, high cold test)	.01⅝	.01⅞	.01¾	.02	.01¾	.02
32-36 Gas Oil (straw color, low cold test)	.02	.02⅛	.02⅛	.02⅜	.02¼	.02½
36-38 Distillate	.02¼	.02½	.02¼	.02½	.02¼	.02½
38-40 Straw Distillate	.02⅜	.02⅞	.02⅜	.02⅞	.02⅜	.02⅞
NORTH TEXAS—						
Below 20 gravity Fuel Oil, per bbl.	.30	.35	.30	.35	.30	.35
24-26 Fuel Oil, per bbl.	.40	.45	.40	.45	.40	.45
32-36 Gas Oil (industrial)	.01½	.01¾	.01½	.01¾	.01½	.01¾
38-40 Straw Distillate	.02¼	.02½	.02¼	.02½	.02¼	.02½
*NORTH LOUISIANA—						
18-20 Fuel Oil, per bbl.	.60	.70	.60	.70	.60	.70
30-32 Gas Oil (low cold test)	.02⅜	.02½	.02⅜	.02½	.02½	.02¾
*ARKANSAS—						
33-36 Distillate	.02½	.02¾	.02½	.02¾	.02⅝	.02¾
30-32 Gas Oil	.02⅞	.02¼	.02⅞	.02¼	.02¼	.02½
16-22 Refinery Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
GULF COAST (South Texas)—						
Gas Oil	.03	.03⅛	.03	.03⅛	.03	.03⅛
Bunker C Fuel (cargo lots), per bbl.	.65	.70	.65	.70	.65	.70
Bunker C Fuel (small lots)	.90		.90		.90	
PENNSYLVANIA—						
30-34 Fuel Oil	.03		.03	.03¼	.03⅛	
36-40 Fuel Oil	.03	.03⅛	.03⅛	.03¼	.03¼	
CALIFORNIA—						
33-36 Distillate	.02	.02½	.02	.02½	.02	.02½
26-32 Distillate	.01¾	.02	.01¾	.02	.01¾	.02
15-19 Fuel Oil, Bunker (at tidewater), bbl.	.55	.90	.55	.90	.55	.90
15-19 Fuel Oil (cargo lots, at tidewater), bbl.	.55	.80	.55	.80	.55	.80
†15-19 Fuel Oil, f.o.b. tank cars	.25	.70	.25	.70	.25	.70
27 plus Diesel, per bbl.	.75	1.00	.75	1.00	.75	1.00
30-34 Gas Oil	.80	1.10	.80	1.10	.80	1.10
CHICAGO DISTRICT (Based on Group 3)—						
18-22 Fuel Oil, per bbl.	.37½	.45	.37½	.45	.37½	.45
22-26 Fuel Oil, per bbl.	.50	.55	.50	.55	.50	.55
28-30 Fuel Oil, per bbl. (zero)	.70	.75	.70	.75	.70	.75
32-36 Gas Oil (industrial)	.01¾	.01⅞	.01¾	.01⅞	.01¾	.01⅞
32-36 Gas Oil (zero)	.02¼	.02½	.02¼	.02½	.02¼	.02½
38-40 Straw Distillate	.02½	.02¾	.02½	.02¾	.02½	.02¾

*Louisiana, Arkansas, Mississippi and East Texas delivery. †Lowest priced fuel oil has high sulphur content.

LUBRICATING OIL AND WAX

OKLAHOMA (Group 3)—	Mar. 31		Mar. 24		Mar. 17	
100 vis., 2 color, 20-25 cold test	.05		.05	.05½	.05	.05½
100 vis., 3 color, 20-25 cold test	.04¾	.05	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.07		.07		.07	
150 vis., 4 color, 20-25 cold test	.06½		.06½		.06½	
180 vis., 3 color, 23-28 cold test	.08½		.08½		.08½	
180 vis., 4 color, 23-28 cold test	.08		.08		.08	
180 vis., 5 color, 23-28 cold test	.07¼	.07½	.07¼	.07½	.07¼	.07½
200 vis., 3 color, 23-28 cold test	.09½	.10	.09½	.10	.09¾	.10
200 vis., 4 color, 23-28 cold test	.09½		.09½		.09½	
200 vis., 5 color, 23-28 cold test	.08½	.09	.08½	.09	.09	
240 vis., 3 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 4 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
240 vis., 5 color, 25-30 cold test	.11¼	.11½	.11¼	.11½	.11¼	.11½
280 vis., 3 color, 25-30 cold test	.15½		.15½		.15½	
280 vis., 4 color, 25-30 cold test	.14½		.14½		.14½	
280 vis., 5 color, 25-30 cold test	.13½		.13½		.13½	
Cylinder Stocks:						
600, steam refined, light green	.05	.07	.06	.07	.06	.07
600, steam refined, dark green	.04	.05	.04	.05	.04½	.05½
190-200 vis., D color, Bright Stocks	.20		.25		.25	
150-160 vis., D color, Bright Stocks 0-10 c.t.	.17		.17	.18	.18	.19
150-160 vis., D color, Bright Stocks 10-25 c.t.	.16		.16	.17	.17	.18
150-160 vis., D color, Bright Stocks 25-40 c.t.	.15½		.15½	.16½	.16½	.17½
150-160 vis., E color, Bright Stocks	.15		.15	.16	.17	.18
Waxes:						
124-126 White Crude Scale Wax	.01¾	.02	.01¾	.02	.01¾	.02

All bright stock prices are for domestic movement.

PENNSYLVANIA—						
34 Neutral	.05½	.06	.05½		.05½	.06
34 Sundebloom	.05½		.05½		.05½	
36 Miners' Neutral	.05½		.05½		.05½	
150, 3 color	.17½	.18	.17½	.18	.16	.18
180, 3 color	.19	.19½	.19	.19½	.18	.19
200, 3 color	.22	.22½	.22	.22½	.21	.22
220, 3 color	.24	.27	.24	.27	.26	.27
600, steam refined	.08¼	.08¾	.08¼	.08¾	.08¼	.08½
650, steam refined	.12	.12½	.12	.12½	.12	
600, Pennsylvania Flash	.11	.14	.11	.14	.13	
630, Pennsylvania Flash	.18		.18		.18	.18½
600, E filtered	.12	.13	.12	.13	.12	
600, D filtered, Oil City	.15	.16	.16	.17	.17	
Pennsylvania Bright Stocks below 35 c.t.	.18½	.19	.18½	.19	.18½	
Pennsylvania Bright Stocks above 35 c.t.	.18		.18		.18	
*122-124 White Crude Scale Wax	.02¼	.02⅜	.02¼	.02⅜	.02¼	
124-126 White Crude Scale Wax	.02¼	.02⅜	.02¼	.02⅜	.02¼	

*At New York.

GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.06	.06¼	.06	.06¼	.06	.06¼
200 vis., 3 color, pale oil	.08¼	.08½	.08¼	.08½	.08¼	.08½
300 vis., 3 color, pale oil	.09½	.09¾	.09½	.09¾	.09½	.09¾
500 vis., 3½ color, pale oil	.10¾	.11	.10¾	.11	.10¾	.11
750 vis., 3½ color, pale oil	.12¼	.12½	.12¼	.12½	.12¼	.12½
1,200 vis., 3½ color, pale oil	.14¾	.15	.14¾	.15	.14¾	.15
2,000 vis., 4 color, pale oil	.15½	.16	.15¾	.16	.15¾	.16
200 vis., 5-6 color, red oil	.07½	.07¾	.07½	.07¾	.07½	.07¾
300 vis., 5-6 color, red oil	.08¾	.09	.08¾	.09	.08¾	.09
500 vis., 5-6 color, red oil	.10	.10¼	.10	.10¼	.10	.10¼
750 vis., 5-6 color, red oil	.11	.11¾	.11	.11¾	.11	.11¾

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

1,200 vis., 5-6 color, red oil	.13¾	.14	.13¾	.14	.13¾	.14
2,000 vis., 6 plus color	.15¾	.16	.15¾	.16	.15¾	.16
CALIFORNIA—						
130 vis., 2½-3 color	.09	.09½	.09	.09½	.09	.09½
200 vis., 2½-3 color	.10	.10¾	.10	.10¾	.10	.10¾
300 vis., 3-3½ color	.10¾	.11½	.10¾	.11½	.10¾	.11½
350 vis., 3½-4 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
400 vis., 3½-4 color	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
Red Neutral:						
200 vis., 4½-5 color	.09½	.10	.09½	.10	.09½	.10
300 vis., 5-6 color	.10¼	.10¾	.10¼	.10¾	.10¼	.10¾
400 vis., 5-6 color	.11	.12	.11	.12	.11	.12
500 vis., 4½-5 color	.12¼	.13	.12¼	.13	.12¼	.13
500 vis., 5-6½ color	.12	.12¾	.12	.12¾	.12	.12¾
600 vis., 6½ plus color	.13	.14	.13	.14	.13	.14

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Mar. 31		Mar. 24		Mar. 17	
Gasoline, U. S. Motor, 58-60, 437 e.p.	.06½	.08	.07	.08	.07	.08
Kerosene, water white, 41-43	.05¾	.06	.06		.06	.06½
*Fuel Oil, Bunker "C," 41-43	1.05		1.05		1.05	
†Fuel Oil, Diesel, 28-30, per bbl.	1.85		1.85		1.85	
Gas Oil, 28 gravity plus	.04¼	.05¼	.04¼	.05¼	.04¼	.05¼
25 pale Paraffin Oil, tank car	.10¼		.10¼		.10¼	
28 pale Paraffin Oil, tank car	.07¼		.07¼		.07¼	
280 red Paraffin Oil, tank car	.12½		.12½		.12½	
250 red Paraffin Oil, tank car	.11½		.11½		.11½	
225 red Paraffin Oil, tank car	.10		.10		.10	
200 red Paraffin Oil, tank car	.09¼		.09¼		.09¼	
Domestic heating oil, min. 32 grav., tank car	.04½		.04½		.04½	
Refined Wax:						
120-122 a.m.p., per lb.	.03		.03		.03	
125-127 a.m.p., per lb.	.03¼		.03¼		.03¾	
130-132 a.m.p., per lb.	.03¾		.03¾		.03¾	
133-135 a.m.p., per lb.	.04¾		.04¾		.04¾	
135-137 a.m.p., per lb.	.04¾		.04¾		.04¾	
Petrolatum in barrels in carload lots, per pound:						
Dark Green	.01¾		.01¾		.01¾	
Amber	.03		.03		.03	
Extra Amber	.03¼		.03¼		.03¼	
Cream	.06		.06		.06	
Lily White	.06¾		.06¾		.06¾	
Snow White	.08		.08		.08	

*Lighterage 5 cents a barrel extra. †Lighterage 6.5 cents a barrel.

NEW YORK (BAYONNE) EXPORT PRICES

	Mar. 31	Mar. 24	Mar. 17
600, steam refined cylinder stocks, in bbls.	.16¼	.16½	.16½
635, steam refined	.17	.17	.17
650, steam refined	.20	.20	.20
600, Pennsylvania Flash	.21	.21	.21
630, Pennsylvania Flash	.26	.27	.27
600, Warren E	.20	.21	.21
600, Oil City E	.19	.20	.20
Light 140-150 Bright Stocks	.26	.25½ .26	.25½ .26
Dark 140-150 Bright Stocks	.24	.23½ .24	.23½ .24

LOS ANGELES EXPORT PRICES

	Mar. 31	Mar. 24	Mar. 17
Kerosene, water white	.04¾ .06	.04¾ .06	.04¾ .06
*U. S. Motor Gasoline, 53-55, 437 e.p.	.04¾ .06¾	.04¾ .06¾	.04¾ .06¾
*60-62, 400 endpoint gasoline	.05¾ .07½	.05¾ .07½	.05¾ .07½

*For coastwise shipment.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Rusk County, Tex.* (Feb. 10, 1931) ..$ .40
Corsicana heavy (Mar. 10, 1931)† ..... .45
Other fields ..... See gravity table

*Posted by Panola Pipe Line Co. †Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties.... See gravity table

WEST TEXAS

Iatan* ..... Same as North Texas
Crane-Upton-Crockett, Howard and Glasscock and Ector (Mar. 10, 1931)† ....$ .35
Winkler and Pecos, Tex., and Lea County, N. Mex. (Mar. 10, 1931)† ..... .40

*Includes Westbrook Field. †Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover (all grades) (Mar. 10, 1931).$ .45
Carterville, Sarepta and Cotton Valley, below 36 gravity..... See gravity table
March 10, 1931 ..... .45
Urania (Oct. 30, 1930) ..... .75
Calion, heavy (Mar. 10, 1931) ..... .45
East El Dorado (Mar. 10, 1931) ..... .45
Other fields..... See gravity table

Note—Smackover and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado posted by Gulf Refining Co. and Magnolia Petroleum Co.; Calion posted by Gulf Refining Co.

GULF COAST

Grade A (Jan. 14)* ..... .80
Grade B, 25° and upward. See gravity table
Jennings, La. (Oct. 30, 1930)† ..... .80
Refugio (light)..... Same as Grade B
Refugio (heavy) (Jan. 14)* ..... .69
Markham (Mar. 10, 1931)‡ ..... .50
High Island (Oct. 30, 1930)† ..... .75

*Humble Oil & Refining Co. †Gulf Refining Co. of Louisiana. ‡Texas Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.

Iles (Feb. 15, 1930):
33 gravity and above .....$ .87
Under 33 gravity ..... .65
Dutton Creek (Oct. 28, 1930) 1.01
Rock Creek, Wyo. (Mar. 5, 1931) ..... .66
Salt Creek ..... See gravity table
Big Muddy (Mar. 5, 1931) ..... .65
Grass Creek, heavy (July 27, 1928) ..... .90
Grass Creek, light (Mar. 5, 1931) ..... .90
Mule Creek (May 21, 1929) 1.20
Elk Basin (Mar. 5, 1931) ..... .90
Lance Creek (Mar. 5, 1931) ..... .98
Poison Spider (Mar. 14, 1927) 1.00
Notches (Mar. 14, 1927) ..... .65
Dallas-Derby (Jan. 1, 1931) ..... .70
Hudson (Jan. 1, 1931) ..... .75
Rex Lake (Feb. 22, 1930) 1.10
Osage (Nov. 1, 1930) ..... .85
Lost Soldier (Mar. 6, 1931) ..... .65
Hamilton Dome (Mar. 14, 1927) ..... .85
Greybull (Oct. 28, 1930) 1.25
Torchlight (Oct. 28, 1930) 1.25
Cat Creek (Oct. 28, 1930) 1.25
Pondera (Mont.) (Oct. 28, 1930) 1.45
Sunburst (Mont.) (Oct. 28, 1930) 1.55
Hogback (N. Mex.) (Oct. 28, 1930) 1.40
Artesia (N. Mex.) (Mar. 10, 1931)..... .40
Lea County ..... .40
Border, Mont. 1.55
Red Coulee, Alberta 1.55

Note—Salt Creek, Osage, Cat Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin, Lost Soldier posted by Producers & Refiners Corp. Artesia posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Ohio Oil Co. ceased posting Artesia on March 5, 1931.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective Nov. 12, 1930)

Penna Grade Oil in National Transit Lines (Pennsylvania) $1.85
Penna Grade Oil in Southwest Pennsylvania Lines (Pennsylvania) 1.80
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia) 1.70
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio) (Sept. 14, 1930) 1.45
Corning Grade Oil in Buckeye Pipe Line Co.'s Line (Mar. 11, 1931) ..... .80
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky) 1.10
Wayne District Oil in Cumberland Pipe Lines 1.17

Tide Water Pipe Co.

Bradford district (Nov. 12, 1930) $2.15
Allegany district (Nov. 12, 1930) 2.15

Pure Oil Co.

Cabin Creek, W. Va. (Nov. 12, 1930) ..$1.70
Kelly Creek, W. Va. (Nov. 12, 1930) .. 1.70
Bradford Hollow, W. Va. (Nov. 12, 1930) 1.70

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (Mar. 10, 1931)* .....$ .60
Luling (Mar. 10, 1931)† ..... .45
Mirando (Jan. 14)* ..... .69
Pettus (Mar. 10, 1931)* ..... .95
Salt Flat (Mar. 10, 1931)* ..... .60
Thrall ‡..... ...
Lytton Springs (Lockhart) See gravity table
Dobrowolski (Oct. 25, 1930)§ .....
Same as Mid-Continent gravity scale up to and including 38-38.9° at 1.01
Somerset (Oct. 25, 1929)§ .....
Same as Mid-Continent gravity scale up to and including 38-38.9° at 1.01

*Posted by Humble Oil & Refining Co. and Magnolia Petroleum Co. †Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co. ‡Thrall prices same

(Continued on Page 118)

CRUDE OIL GRAVITY TABLE

Gravity—	1 Kansas, Oklahoma, North Central, East Central Texas	2 East Texas	3 North Louisiana-Arkansas	4 Carson and Hutchinson (Texas Panhandle)	5 Gray County (Texas Panhandle)	6 Salt Creek, Wyoming	7 Stephens, Arkansas	8 Grade B, Gulf Coast
Below 25	....	$.40	....	....	....	....	....	$.69
25 to 25.9	....	.40	....	....	....	....	....	.71
26 to 26.9	....	.41	....	....	....	....	....	.73
27 to 27.9	....	.42	....	....	....	....	....	.75
28 to 28.9	....	.43	....	....	....	....	....	.77
Below 29	$.43	....	$.43	....	....	....	$.54	....
29 to 29.9	.45	.45	.45	....	....	$.45	.58	.79
30 to 30.9	.47	.47	.47	....	....	.47	.62	.81
31 to 31.9	.49	.49	.49	....	....	.49	.66	.83
32 to 32.9	.51	.51	.51	....	....	.51	.70	.85
33 to 33.9	.53	.53	.53	....	....	.53	....	.87
34 to 34.9	.55	.55	.55	$.38	$.43	.55	....	.89
35 to 35.9	.57	.57	.57	.40	.45	.57	....	.91
36 to 36.9	.59	.59	.59	.42	.47	.59	....	.93
37 to 37.9	.61	.61	.61	.44	.49	.61	....	.95
38 to 38.9	.63	.63	.63	.46	.51	..	....	.97
39 to 39.9	.65	.65	.65	.48	.53	....	....	.99
40 and above	.67	.67	.67	.50	.55	....	....	1.01

Column 1—Stanolind Crude Oil Purchasing Co. posted above prices on March 5, effective in Kansas, Oklahoma, North Texas, Central Texas and East Central Texas, where it purchases oil. Magnolia Petroleum Co. posted same day but with these differences: Below 26 degrees, 40 cents; 26-26.9 degrees, 41 cents; 27-27.9 degrees, 42 cents; 28-28.9 degrees, 43 cents. Mid-Continent Petroleum Co., Tidal Oil Co., Tidal Western Oil Co., Continental Oil Co., H. F. Wilcox Oil & Gas Co., Eason Oil Co., Standard Oil Co. of Kansas, Sinclair Refining Co., White Eagle Oil Corp., and Producers Oil Co. met the price on March 6, Champlin Refining Co. on March 7, Carter Oil Co., The Texas Company, Humble Oil & Refining Co., Empire Pipe Line Co., Gypsy Oil Co., and Gulf Pipe Line Co. met Stanolind prices on March 10, Pure Oil Co. posted same schedule in Van, Texas, Pool, March 5.

Column 2—East Texas crude posted by Magnolia Petroleum Co. March 26.

Column 3—Standard Oil Co. of Louisiana and The Texas Company posted on March 10. Standard prices apply to Caddo, Homer, Haynesville, Bull Bayou, Sabine, Crichton, De Soto, El Dorado, Cotton Valley, Sarepta and Carterville.

Column 4—Posted by Humble Oil & Refining Co., March 10. Adopted by other buyers same day.

Column 5—Posted by Humble Oil & Refining Co., March 10. Adopted by other buyers same day.

Column 6—Posted by Midwest Refining Co., March 5, 1931. All crude above 37.9 degrees 61 cents.

Column 7—Posted by Louisiana Oil Refining Co. and Atlantic Oil Producing Co., October 30, 1930.

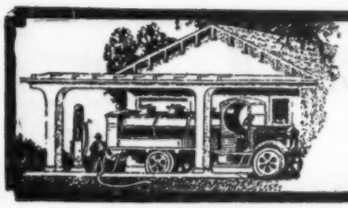
Column 8—Posted by Humble Oil & Refining Co., January 14, 1931, meeting Gulf Refining Co.'s price schedule posted October 30, 1930.

CALIFORNIA CRUDE OIL PRICES

(Posted by Union Oil Co. March 30 and the Standard Oil Co. of California March 31)

	Alamitos Hts., Signal Hill, Seal Beach, Torrance, Athens, Rosecrans, Dominguez, Santa Fe Springs	Montebello, Huntington Beach, East Coyote, Richfield, Brea-Olinda,	Santa Paula	Orcutt	Coalinga, McKittrick, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills, ...set Hills
11 to 13.9	....	....	....	....	$.50
14 to 14.9	$.65	$.60	$.55	$.55	.55
15 to 15.9	.65	.60	.55	.55	.55
16 to 16.9	.65	.60	.55	.55	.55
17 to 17.9	.65	.60	.55	.55	.55
18 to 18.9	.65	.60	.55	.55	.55
19 to 19.9	.65	.60	.55	.55	.55
20 to 20.9	.65	.58	.53	.53	.53
21 to 21.9	.62	.56	.51	.51	.51
22 to 22.9	.59	.53	.49	.49	.49
23 to 23.9	.56	.50	.47	.47	.47
24 to 24.9	.53	.47	.45	.45	.45
25 to 25.9	.50	.44	.43	.43	.43
26 to 26.9	.47	.41	.41	.41	.41
27 to 27.9	.44	.38	.39	.39	.39
28 to 28.9	.41	.35	.37	.37	.37
29 to 29.9	.38	....	.35	.35	.35
30 to 30.9	.35	....	....	....	....

For the time being the Union Oil Co. and the Standard Oil Co. will not post a schedule of crude oil prices for the Playa del Rey and Kettleman Hills Fields.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Mar. 31

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago*	14.0	15.0	3.0	9.0
Decatur, Ill.	14.4	15.4	3.0	9.0
E. St. Louis	13.7	14.7	3.0	8.2
Joliet	14.4	15.4	3.0	9.0
Peoria	14.4	15.4	3.0	9.0
Quincy	14.2	15.2	3.0	8.8
Davenport, Ia.	14.5	15.5	3.0	9.3
Des Moines	14.5	15.5	3.0	9.3
Keokuk	14.5	15.5	3.0	9.3
Sioux City	14.1	15.1	3.0	8.9
Duluth, Minn.	15.5	16.5	3.0	9.9
Mankato	13.1	16.0	3.0	9.7
Minneapolis	15.2	16.2	3.0	9.9
La Crosse, Wis.	14.2	15.2	2.0	10.0
Milwaukee	13.1	14.1	2.0	8.9
Madison	13.3	14.3	2.0	9.1
Detroit, Mich.	14.8	15.8	3.0	10.7
Grand Rapids	14.7	15.7	3.0	10.6
Saginaw	14.9	15.9	3.0	10.8
Evansville, Ind.	15.1	16.1	4.0	9.9
Indianapolis	15.3	16.3	4.0	10.1
South Bend	15.4	16.4	4.0	10.2
Fargo, N. D.	16.0	16.0	3.0	11.9
Huron, S. D.	16.3	17.3	4.0	10.7
Sioux Falls	15.8	16.8	4.0	10.4
K. C., Mo.	13.9	14.9	3.0	7.6
Springfield†	13.9	14.9	3.0	8.5
St. Louis†	13.9	13.9	2.5	8.3
St. Joseph	13.5	14.5	3.0	7.5
Wichita, Kans.	12.8	13.8	3.0	7.8
Bartlesville, Ok.	12.0	15.0	4.0	7.5

*Effective February 17, discounts on Q.D.A. in Chicago district 2 cents off service station price on purchases of 500 gallons and over; and 4 cents off service station on purchases of 1,000 gallons or more per calendar month.

†State tax 2 cents; remainder city tax.

Effective August 5, the following quantity discounts from the service station prices are allowed on monthly sales of gasoline: 500 gallons or more, 3 cents; 75,000 gallons or more, 4½ cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discounts on the previous month's purchases.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Wh'ls'e price	Retail* price	Incl'ds tax of	tank wagon
Fresno	15.0	12.0	3.0	17.0
San Francisco	15.0	12.0	3.0	15.5
Los Angeles	13.5	10.5	3.0	15.5
Reno, Nev.	22.0	19.0	4.0	19.0
Portland, Ore.	18.5	15.5	4.0	16.5
Seattle, Wash.	15.0	12.0	3.0	16.5
Tacoma	15.0	12.0	3.0	16.5
Spokane	20.0	19.0	3.0	20.5
Phoenix, Ariz.	20.5	21.0	5.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 6-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 3 cents plus a 2-cent special temporary discount subject to withdrawal at any time.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	17.0	18.0	6.0	12.0
Baton Rouge	16.0	17.0	5.0	12.0
Alexandria†	17.0	18.0	6.0	12.0
Lafayette*	17.0	18.0	6.0	12.0
Lake Charles*	17.0	18.0	6.0	12.0
Shreveport	16.0	17.0	5.0	12.0
Knoxville, Tenn.	18.5	19.5	5.0	13.5
Memphis	16.0	17.0	5.0	11.0
Chattanooga	18.0	19.0	5.0	13.0
Nashville	17.5	18.5	5.0	12.5
Bristol	19.0	20.0	5.0	14.0
Lt. Rock, Ark.	17.0	18.0	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in Parish of Rapides.

Two-cent discount off gasoline tank wagon price to dealers and commercial accounts.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	15.25	17.25	4.0	9.25
McCook	15.75	18.75	4.0	10.75
Norfolk	15.75	17.25	4.0	9.75
N. Platte	16.75	18.75	4.0	10.50
Scottsbluff	16.00	16.00	4.0	10.25

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	18.0	20.0	6.0	12.5
Augusta	18.0	20.0	6.0	15.5
Macon	18.0	20.0	6.0	13.0
Savannah	18.0	20.0	6.0	12.0
Birm'ham, Ala.	17.0	19.0	5.0	13.0
Mobile	17.0	19.0	4.0	13.0
Montgomery	17.0	17.0	4.0	13.5
Clarke'le, Miss.	18.0	20.0	5.0	13.5
Jackson	15.0	15.0	5.0	11.0
Natchez	18.0	20.0	5.0	14.5
Gulfport	16.0	16.0	5.0	13.5
Vicksburg	16.0	18.0	5.0	11.0
Jack'ville, Fla.	17.0	19.0	6.0	12.0
Miami	18.0	20.0	6.0	13.0
Pensacola	18.0	20.0	6.0	13.0
Tampa	17.0	19.0	5.0	12.0
Lexington, Ky.	17.0	18.0	5.0	12.0
Covington	16.0	17.0	5.0	11.9
Louisville	16.0	17.0	5.0	11.0
Ashland	17.0	19.0	5.0	13.0
Paducah	17.0	18.0	5.0	11.0
Bowling Green	19.0	21.0	5.0	14.5
Corbin	18.0	19.0	5.0	15.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery, Birmingham and Mobile state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 2 cents.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atl'tic City, N. J.	14.5	15.5	3.0	11.5
Newark	13.5	15.5	3.0	10.5
Annapolis, Md.	16.0	17.0	4.0	11.0
Baltimore	15.2	16.2	4.0	9.5
Cumberland	17.0	18.0	4.0	12.0
Wash'gton, D.C.	13.7	14.7	2.0	10.7
Danville, Va.	17.8	18.8	5.0	11.8
Norfolk, Va.	16.3	17.3	5.0	10.0
Petersburg	17.3	18.3	5.0	11.3
Roanoke	18.0	17.0	5.0	12.0
Richmond	16.7	17.7	5.0	10.7
Charles'n, W.Va.	16.5	17.5	4.0	11.5
Keyser	17.1	18.1	4.0	12.0
Parkersburg	15.2	16.2	4.0	10.2
Wheeling	16.4	17.4	4.0	11.4
Charlotte, N. C.	16.0	17.0	5.0	11.0
Hickory	18.6	19.6	5.0	12.6
Mt. Airy	18.5	19.5	5.0	12.5
Salisbury	18.5	19.0	5.0	12.5
Charleston, S.C.	17.3	18.3	6.0	10.3
Columbia	19.2	20.3	6.0	12.3

Effective February 26, Standard Oil Co. of New Jersey has increased its dealer and commercial account discounts 1 to 3 cents per gallon in Maryland.

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	*12.0	*14.0	...	12.0
Philadelphia	*12.0	*14.0	...	12.0
Scranton	*12.0	*14.0	...	12.0
Allentown	*12.0	*14.0	...	12.0
Altoona	*12.0	*14.0	...	12.0
Erie	*12.0	*14.0	...	12.0
Dover, Del.	15.0	17.0	3.0	12.0
Wilmington	15.0	17.0	3.0	12.0
Spring'd, Mass.	14.5	16.5	2.0	10.0
Fall River	14.1	15.1	...	10.0
Worcester	14.3	16.3	2.0	10.0
Boston	13.5	15.5	2.0	10.0
Providence, R.I.	13.7	15.7	2.0	10.0
Hartford, Conn.	14.5	16.5	2.0	10.0
New Haven	14.6	16.6	2.0	10.0

*Includes tax of 3 cents in Pennsylvania. Pennsylvania tax is collected by the dealer and paid by him direct to the State. Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

STANOLIND FURNACE OIL IN CHICAGO

All dumps of 50 gallons or more ..... .07

Note—Outside Chicago furnace oils discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points*	15.0	16.0	4.0	†13.0

*Dealers and commercial accounts 2 cents under tank wagon.

†Service station price 14 cents.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	15.0	18.0	4.0	12.5
Pueblo	13.0	15.0	4.0	12.0
Grand Junction	18.0	19.0	4.0	16.0
Casper, Wyo.	15.0	18.0	4.0	10.0
Cheyenne	16.0	19.0	4.0	11.5
Butte, Mont.	19.0	22.0	5.0	16.0
Billings	20.0	23.0	5.0	14.5
Great Falls	20.0	23.0	5.0	16.0
Helena	20.0	23.0	5.0	16.0
Salt Lake, Utah	*18.0	17.0	3.5	16.0
Albu'que, N. M.	16.0	20.0	5.0	14.0
Boise, Idaho†	21.5	....	5.0	18.0
Twin Falls‡	21.5	....	5.0	18.0

*Less 4 cents. †Less 3 cents. ‡Less 2½ cents.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	15.0	18.0	4.0	11.0
Fort Worth	15.0	18.0	4.0	10.0
Houston	14.0	18.0	4.0	11.0
San Antonio	14.0	18.0	4.0	10.0
El Paso	14.0	18.0	4.0	12.9
Texarkana	16.0	16.0	4.0	11.0
Muskogee, Ok.	12.0	15.0	4.0	9.0
Okla. City	10.0	12.0	4.0	10.0
Tulsa	12.0	15.0	4.0	10.0
Ft. Smith, Ark.	15.0	16.0	6.0	12.0
Little Rock	17.0	18.0	6.0	12.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	16.6	17.6	2.0	15.6
New York*	15.3	15.3	2.0	14.3
Buffalo	15.8	15.8	2.0	14.8
Rochester	16.0	16.0	2.0	14.0
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	15.5	15.5	2.0	13.5
Augusta, Me.	18.8	18.8	4.0	14.5
Manch'tr, N. H.	18.4	18.4	4.0	14.6
Burlington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	12.0	8.0
V.M.&P. naphtha	14.0	9.5
Cleaners' naphtha	16.2	11.6
Stanisol	16.2	11.6

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

TANK WAGON CHANGES

Standard Oil Co. (Kentucky) reduced the gasoline tank wagon and station prices and the kerosene prices from 1 to 2 cents throughout Mississippi, Alabama, Georgia and Florida on March 11 and in Kentucky March 12 in accordance with the accompanying table.

Standard Oil Co. of New Jersey reduced the gasoline station prices 1 cent March 20 in Roanoke, Va., to 17 cents.

Standard Oil Co. (Indiana) reduced the gasoline station price to 13.1 cents in Sioux City, Iowa, March 30.

Continental Oil Co. reduced the gasoline service station price 4 cents in Salt Lake City to 17 cents. Effective March 25 there was a 4-cent dealer discount put into effect at Salt Lake City off the tank wagon price at time of delivery. Effective same date, March 25, allowance to dealers off tank wagon price of gasoline at time of delivery at Boise, Idaho, 2½ cents. At Twin Falls the allowance is 4 cents at time of delivery off tank wagon price of gasoline to dealers. Effective March 28 tank wagon and service station Denver, Colo., advanced 1 cent. Standard Oil Co. of California reduced the gasoline wholesale price at Spokane, Wash., to 20 cents, March 27.

CRUDE PRICE CHANGES

March 26 the Magnolia Petroleum Co. posted prices in the East Texas area on the same schedule as that in effect in Oklahoma, North Texas and Kansas. March 30 the Union Oil Co. made a general reduction in the prices paid for California crude and established a lower schedule of prices for the high gravity oils than the low gravity crudes as shown in the accompanying table. The Standard Oil Co. of California met these prices March 31.

STANDARD (N. J.) SUED ON ALCOHOL PROCESSES

Suit against Standard Oil Co. of New Jersey for alleged infringement of patents covering production of alcohols from liquefied petroleum gases has been filed in United States District Court, New Jersey district, by Petroleum Chemical Corp., a subsidiary of National Distillers Products Corp. Petroleum Chemical Corp. has also been chiefly sponsored by Barnsdall Oil Co., Blair & Co. and A. D. Little, Inc., chemical engineers.

This company has been operating a plant for the production of alcohols at Barnsdall, Okla.

CANADIAN OIL TARIFF ASKED

CHATHAM, Ontario, Mar. 28.—President R. J. Hutchings and Vice President E. Michener of the Alberta Oil and Gas Association have presented to the federal government at Ottawa a memorial in favor of tariff protection for Canadian oil producers. The memorial suggests an import duty of 1 per cent imperial gallon on imported crude and an addition of 2½ cents a gallon on the present tariff on imported gasoline and all other processed oils.

MOVE TO NEW OFFICES

NEW YORK, Mar. 30.—David C. Reid Co., ship brokers and petroleum brokers and operators, have moved their offices from 15 Moore Street to the new building at 21 West Street, where they are located on the twelfth floor.

The David C. Reid Co., prominent for many years in the local petroleum field, was taken over a short time ago by P. R. Johnson from David C. Reid, who formerly operated the business as David C. Reid, Inc.

CRUDE OIL PRICES

(Continued from Page 117)

as North Central Texas less 19½ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products Co. ‖Pioneer Oil & Refining Co.

MIDDLE WESTERN STATES

Ohio Oil Co.

(Effective Mar. 6, 1931)

Lima	$ .90
Wooster	.90
Illinois	.80
Indiana	.50
Princeton	.80
Plymouth	shut in
Western Kentucky	.75
Midland, Mich.* (Mar. 13, 1931)	.75
Dundee, Mich. (Oct. 26)†	
	Same as Mid-Continent gravity scale
Upper and Lower Traverse Sands, Mich. (Oct. 28, 1930)†	
	Same as Mid-Continent gravity scale
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (Oct. 28)‡	.85
Oil City, Ky. (Mar. 7, 1931)§	.70
Oil Springs (Canada) (Oct. 28)¶	1.57
Petrolia (Canada) (Oct. 28)¶	1.50
Alberta (Canada)‖:	
50° and above (Mar. 1, 1931)	2.36
45 to 45.9 (Mar. 1, 1931)	1.87

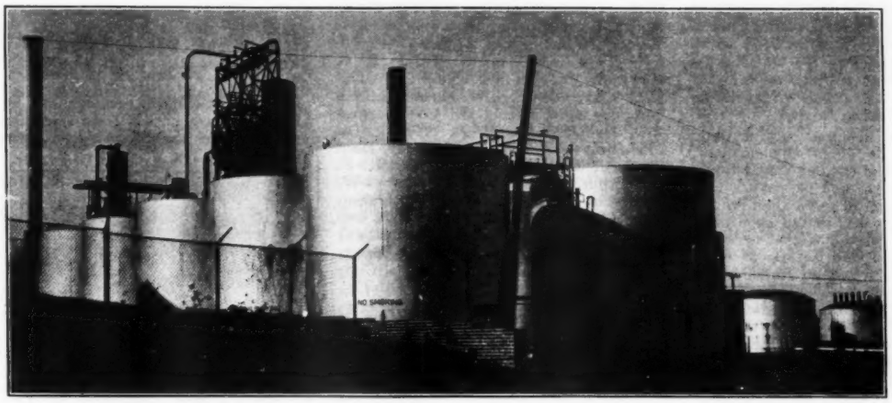
*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Paragon Development Co. §Posted by Stoll Refining Co. ¶Posted by Imperial Oil, Ltd. ‖Posted by Imperial Oil, Ltd., and Regal Oil & Refining Co. of Calgary.

MEXICAN CRUDE

Panuco* ..... $ .56

*F.o.b. ship, based on January transactions and exclusive of taxes and bar dues.

PITTSBURGH DES MOINES



The sixteen 1120-barrel tanks illustrated are each 20 feet high by 20 feet diameter with welded cone roofs. They are part of a single PDM installation in the Central West oil field totaling 41 tanks of various sizes for this particular customer.

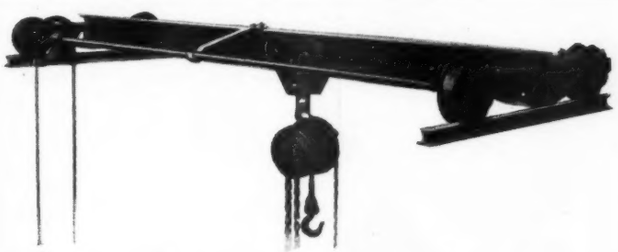
Tanks
Gas Holders
Steel Fabrication

Thirty four years' experience in the design, manufacture and erection of reliable equipment for the oil and gas industry qualifies "Pittsburgh-Des Moines" to bid on *your* work. Eastern and western fabricating plants, modern electric welding equipment, and skilled erection crews comprise our organization.

Pittsburgh-Des Moines Steel Company

3413 Neville Island, Pittsburgh, Pa. — 1225 Praetorian Bldg., Dallas, Texas — 915 Tuttle St., Des Moines, Ia.

New York Atlanta Chicago Seattle San Francisco



You Need a Good Crane In Your Engine Room

The absence of a dependable crane in your engine room is like being caught without a jack when you get a flat tire. You may not need either very often but when you do, you want them badly.

Industrial Brownhoist single or double I-beam hand traveling cranes are built with patented, one-piece, cast steel end trucks and have roller bearings on both sides of each wheel. They are easy operating under all conditions and are quickly installed. May we give you complete information regarding the right size for your work?

Industrial Brownhoist Corporation
General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco, Cleveland.

Plants: Brownhoist Division, Cleveland; Industrial Division, Bay City, Michigan; Elyria Foundry Division, Elyria, Ohio.

INDUSTRIAL BROWNHOIST

Guiding the way to cheaper water . .

Pomona Turbine Pumps stand out as a beacon of security, safely guiding water users to economical water production. This modern pumping method has been progressively designed to meet the critical, exacting demands of all present-day needs. Results prove the correctness of this scientific design. Pomona Turbine Pumps have the pronounced advantage of the following exclusive features: Water-lubrication, Goodrich Cutless bearings, built-in Westinghouse motors, adjustable pumping capacity, non-corrosive stainless steel pump shaft and straight water-passage through pump stages.

DISTRIBUTORS

U. S. Wind Engine & Pump Co.
11th & Hickory Streets
Kansas City, Mo.

The Shuler Company
1138 West 37th Street
Oklahoma City, Okla.

Southern Engine & Pump Company
615 Washington Avenue
Houston, Texas

POMONA TURBINE PUMPS

Pomona Pump Co.
Pomona, Calif.

NEW IDEAS ADVANCED AT TULSA A.P.I. MEETING

(Continued from Page 22)

estimates of the capacity of each type of sand to yield oil.

For instance, it has been shown in Seminole area that the Wilcox sand will yield from 35 to 50 per cent of its total saturation in the first year. This being the case it should be possible to make fairly close estimates of the probable production from the Wilcox sand in the Oklahoma City Pool.

Mr. Stalcup's Paper

The second paper on the morning program was delivered by H. M. Stalcup, vice president of Skelly Oil Co., Tulsa,

W. K. Whiteford

on "Economic Aspects of Oil and Gas Production," which was well received and caused considerable discussion. Mr. Stalcup said in part:

"One logical development occasioned by present conditions in our industry is the pronounced tendency for neighboring operators to join forces and effect mutual economies by perfecting simple operating arrangements wherein one of them operates both properties for the joint account. There is abundant opportunity for a great many more of these sensible

R. S. McFarland

arrangements to be perfected and their obvious saving realized.

"Carrying this thought a step further, and to its logical conclusion, what is there to prevent producers from applying one of the principles of unitization to an almost endless number of old and settled production situations by letting one of the interested producers in a group operate, not only the adjoining lease, as is now quite often being done, but a sizeable group of properties, and in the case of many small pools, the entire group of leases constituting the pool? A definite reduction in lifting costs could thus be accomplished by the elimination of a great amount of needless, if not to say senseless, supervision and overhead, as wel as the perfectly obvious savings in the direct operating expenses. This is the age of co-operation, particularly in the producing branch of the oil industry, and it does appear entirely logical that we should take advantage of such obviously common sense savings.

"Unitization of new and only partially developed pools is admittedly difficult, partly on account of the fact that relative values are unknown, and we have a natural fear of giving up more than we receive. This problem is not so important, however, in the case of settled or semi-settled pools, and unitization of such should be relatively easy to realize; and, once having experienced the many economies of such a plan of operation, substantial progress will have been made in the general advancement of the whole theory of unitization as it applies to new development."

This suggestion was one of the outstanding features of the program devoted to a discussion of unit operation from economical, mechanical and administrative viewpoints. The discussion developed the fact that this general plan is being practiced in many fields and being considered in others. There is ample room for its expansion as pointed out by many of those discussing Mr. Stalcup's paper.

Value of Well Records

Some other ideas to be applied to the operation of the older fields were included in Mr. Stalcup's paper and one that seemed to be of very practical value was the need of establishing individual well records and keeping them in such a way that it is possible for all parties interested from the superintendent of production down to the leaseman to know just what is going on at each well on a lease.

That such records can be easily kept without adding materially to the overhead expense in clerical help has been demonstrated by companies using systems of this kind, and the value of such records is illustrated by one instance reported at this meeting.

A lease in the Powell, Tex., Field consisting of seven wells had an earning of about $1,400 for a period of one year between September, 1929, and September, 1930. Records made by an engineer sent to this lease for a three-month period to make a very detailed study of production conditions caused the company to plug and abandon four out of the seven wells and the profits from the remaining three wells were $1,100 in January and $1,400 in February, 1931.

Other instances were given and it was plainly indicated that the study of individual wells is very necessary whether the lease is to be operated by the company drilling it or is to be combined with other properties in a form of unit operation. It is very essential that such records be consulted frequently and their value lies in their use. This was illustrated in one case where the lease man sent in a requisition for a new string of rods for an old well. This requisition was approved by the district superintendent, but when it reached the production office a check of the records revealed the fact that the rods in the well had only broken three times, but because two of these breaks had occurred at short intervals the leaseman was under the impression that the string was unfit for further use. When he checked his copy of the records he was convinced that he could use the string much longer.

Election of Officers

The first business of the afternoon session was the report of the nomination committee headed by C. D. Watson, Tulsa, nominating officers for next year as follows: W. K. Whiteford, Barnsdall Oil Co., Tulsa, chairman; D. L. Trax, Gypsy Oil Co., Tulsa, vice chairman; and E. L. Bell, Deep Rock Oil & Refining Co., Drumright, secretary.

The advisory committee nominated is headed by H. M. Stalcup, Skelly Oil Co., Tulsa, chairman. The other members are: A. W. Ambrose, Empire Companies, Bartlesville, Okla.; C. W. Baker, T. B. Slick, Inc., Tulsa; R. A. Bonnell, Tidal Oil Co., Tulsa; W. K. Whiteford (ex-officio), Barnsdall Oil Co., Tulsa; J. J. Conry, Carter Oil Co., Tulsa; J. S. Dewar, Phillips Petroleum Co., Bartlesville, Okla.; Charles F. Dimit, Phillips Petroleum Co., Bartlesville, Okla.; G. W. Dye, Wilcox Oil & Gas Co., Tulsa; E. P. Filley, The Texas Company, Tulsa; L. C. Hawkins, Magnolia Petroleum Co., Oklahoma City, Okla.; A. V. Hoenig, Indian Territory Illuminating Oil Co., Bartlesville, Okla.; J. E. Holm, Atlantic Oil Producing Co., Tulsa; R. K. Huey, Deep Rock Oil & Refining Co., Tulsa; R. F. MacArthur, Barnsdall Oil Co., Tulsa; W. A. Martin, Sinclair Oil & Gas Co., Tulsa; George O. Moody, Mid-Continent Oil Co., Tulsa; E. J. Nicklos, Continental Oil Co., Ponca City, Okla.; George Porter, Wirt Franklin Oil Co., Oklahoma City, Okla.; F. O. Prior, Stanolind Oil Co., Tulsa; W. G. Ricketts, Amerada Petroleum Corp., Tulsa; Ralph Roark, Shell Petroleum Corp., Tulsa; S. G. Sanderson, Gypsy Oil Co., Tulsa; H. F. Schoonover, Pure Oil Co., Tulsa; M. E. Wagner, Mid-Kansas Oil & Gas Co., Tulsa; and J. A. Wolfe, Prairie Oil & Gas Co., Tulsa.

Upon motion from the floor the report was accepted as read and nominations closed and the above officers elected unanimously.

Mr. McWilliams' Paper

Following the election of officers J. R. McWilliams, production engineer for the Skelly Oil Co., Tulsa, presented his paper, "Plan for Better Utilization of Gas Energy in the Production of Oil," which is printed in full on page 24 of this issue.

This paper caused a great deal of discussion for while it was generally agreed that Mr. McWilliams is advocating a sound practice, the cautious instinct of

—By Alvin C. Krupnick

J. R. McWilliams

the engineer made itself evident in the many objections and doubts expressed during the discussion.

It is admitted there will be a number of details that may play a large part in the ultimate recovery of oil from each individual lease not covered in the plan, but if each pool is considered as a unit and the total gas energy originally contained in that pool is apportioned to the lease holders in equal shares it seems very logical that in the end they will have received their fair share of the oil contents of the lease, and that this share will actually be larger than it would have been had the pool been operated on a competitive basis.

It was admitted there was only a limited amount of gas energy within the natural oil reservoir when tapped by the drill, and this energy together with the force exerted by the movement of water that surrounds the oil body will be required to secure the oil, but some argued that apportioning this gas energy would work hardships upon some lease holders, but no one would venture to state that control of gas energy would not be beneficial.

W. K. Whiteford opposed the general idea on the basis that something similar had been tried in California without the anticipated success, but at the same time stated the conditions found in the fields of the Pacific Coast districts are very different from those in other parts of this country.

It is very evident the idea has merit although to convince a body of engineers and executives that it should be enforced

H. M. Stalcup

by state legislation will be quite difficult, but if pools operated as units will try the plan it will be possible to gather sufficient additional data on the actual results to permit final decision being made. It is admitted modifications will have to be made in many details but those are the problems for the engineers to work out for the individual lease and use the gas energy allotted to that lease to the best advantage.

Mr. Reeser Answers Mr. Holliday

E. B. Reeser, president of the American Petroleum Institute welcomed the visitors to Tulsa. Mr. Reeser said meetings such as this one were unknown and perhaps unthought of when he started in the oil industry and were very definite indications of the progress that has been made in co-operation and with such a spirit no industry can fail.

Mr. Reeser took occasion to compliment W. R. Holliday, president of the Standard Oil Co. of Ohio, upon his very frank discussion of the legal and economic handicaps of the oil industry as published in the March 26 issue of The Oil and Gas Journal. He however took exception to the charge that the producers did not get their house in order.

Mr. Reeser claimed that the producers have limited their production to the requirements as set forth by the purchasers but because of the fact that the major companies have failed to take about 100,000 bbls. of this oil it has been bought up by the smaller refineries and finds its way to the consumer in what is known as "bootleg" gasoline and this has broken down the price structure in many areas.

Further, the major companies have been reducing storage stocks of crude oil during January and February, something unheard of before, and this has helped to throw this additional oil upon the open market. Prices must be maintained at a level high enough to permit a reasonable profit to the producer or the whole scheme of limiting production will be a failure.

This effort to maintain a fair price for a commodity is by no means peculiar to the petroleum industry for it is attempted in agriculture, mining, lumber and many other industries where it is possible to produce more of the raw products than

can be immediately used in manufacturing.

The price, Mr. Reeser said, must be high enough to permit the small wells to continue at a profit for if they are forced to shut down and the industry depends only upon the flush production fields it will only be a short time before the loss of the older wells will be felt and it will be economical waste to abandon pools until the maximum recovery of oil has been secured.

Mr. Reeser's remarks were well received and following him R. F. MacArthur read a paper on "Unit Operation" that brought out a number of very good arguments for the adoption of this plan by the industry.

W. P. Z. German, general counsel for the Skelly Oil Co., answered a number of questions asked by Earl Oliver and also gave a brief reviw of his paper presented before the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York City in February. The main points touched upon by Mr. German were much the same as those given in his briefed paper published on Page 26 of The Oil and Gas Journal of March 19.

Following this very enlightening discourse on the legal side of the problems of unit operation by two recognized authorities on this subject, the meeting was thrown open to further discussion of Mr. McWilliams' paper and while no consensus of opinion could be arrived at it was stated by Carl A. Young and many others present that meetings of this kind have a very definite influence for advancement of the industry and it is hoped more discussions of the economic phases of engineering and production problems will be had at future meetings, not only in Oklahoma but in all A.P.I. division of production district meetings.

OIL MEN ARE ASKED TO SAVE DRAKE WELL SITE

(Continued from Page 25)

a small building was erected near the well site and the collection of relics was installed in it. This building, named the Drake Memorial Museum, was opened August 27, 1913, the fifty-fourth anniversary of the Drake discovery.

Museum Ruined by Fire

About 10 years later, a short time after Mr. Bell's death in 1923, this modest museum was ruined by fire. Most of the precious relics in it were saved, though some were damaged by fire and water. They were transferred to the basement of the Benson Memorial Library in Titusville, where they still remain.

In 1914, Canadohta Chapter Daughters of the American Revolution, of Titusville, after acquiring title to about 1¼ acres of land surrounding the Drake well site, erected near the projecting casing a native boulder monument into one face of which was set a bronze plate bearing in bas-relief a picture of the original well with an appropriate inscription.

At various times citizens of Titusville have subscribed amounts ranging from $200 to $1,500 in efforts to keep the site of the well accessible and to prevent further damage by erosion. Owing to the limited funds available, however, it has not been possible to build protective works of a permanent nature.

The site of the well is on the flood plain of Oil Creek, at a point where the stream, whose general course is south, makes a broad sweep, or bow, to the west. The well is near the center of the bow and about 250 feet east of the stream itself. While the land immediately around the well is flooded in times of extrarordinarily high water only, most of the land within the bow is lower and subject to frequent flooding. The contour of the ground is such that high water creates a swift current of great erosive power, with the result that there has been constant danger of the land around the well being washed away.

In 1929, Titusville residents built a low rock-filled dam, or break-water, which appears to have been successful in preventing any damage during high-water seasons since then, but the floods have not been as high as usual and according to Engineer Weber this structure cannot be considered either permanent or adequate. Even now in the low-water season a stream flows beneath this dam.

Permanent Protection Planned

In accordance with the recommendations of Mr. Weber, following his survey, it is planned to build an embankment, or dike, to an elevation of 1 foot above the highest flood mark known. This embankment is to be protected on the creek side by riprap, together with sheet piling driven into the ground at the toe of the riprap in order to prevent undercutting.

The beautiful natural setting of the spot, between tree-covered hills, emphasizes the opportunity for the development of a park on the additional land to be acquired in accordance with the plans of the committee in charge. An artificial lake is to be one of the features of the park. One of the first steps will be removal of stagnant water which now stands in low places around the old well. It is planned then to raise as much as possible of the land protected by the dike to a level higher than that of ordinary floods. The material for this purpose is to be obtained by excavating in and around parts already low, thus forming a bed for the lake, with a small island. The water in the lake will be kept fresh by means of inlet and outlet pipes connecting with the creek, the former well below the surface in order to prevent the entrance of oil into the lake. A new roadway leading to the well and the boulder monument is to be constructed.

While the improvements planned will make it necessary to abandon two oil wells on the land affected, all other wells with some rearrangement of rod lines, could be continued in operation. It is believed that many tourists would welcome an opportunity to see a typical Pennsylvania oil lease in operation, and it is regarded as appropriate that such an opportunity should be offered in connection with the Drake well memorial.

Made Fortunes for Others

Although the Drake well marked the beginning of a new industry that has created huge fortunes for others, neither Colonel Drake himself, Uncle Billy Smith, Sam Smith, nor so far as is known any one of the others who played an important part in the drilling job ever became moderately well-to-do. On the contrary, 10 years after his triumph on Watson's Flats, Colonel Drake was fighting actual destitution in addition to serious illness. A private letter written to a friend by Colonel Drake, January 30, 1871, from Chapel Hill, N. J., where he then was residing, says:

"I am confined to the house now, as we have about 16 inches of snow, and the weather has been very cold for the locality. I have coal enough to last this week out. My wife has just told me not to worry, as a young lady in the neighborhood wants a dress made, and she has taken the job for $4, and this will buy us a half a ton of coal. I hope you and yours may never be obliged to figure quite so close to keep from freezing."

A friend who visited Colonel Drake at Chapel Hill, "where his desolate home was reached after walking for an hour through mud and darkness," wrote: "I found him very feeble and when I left he and his wife informed me that he had not slept any during the night on account of pain. I found them without any of the comforts of life and living on the bare floor. When I spoke to the colonel about there being snow in Titusville for sleighing he exclaimed with tears in his eyes, 'Thank God, we have not had much cold weather here! What will we do without fuel and my children's shoes worn out, and comparatively nothing in the locker, and I a cripple, if we have a very cold winter?'"

Old Friends Aid Stricken Family

Old friends went to the stricken family's aid and the Pennsylvania legislature passed an act granting an annuity of $1,500, which was paid to Colonel Drake until his death and then to Mrs. Drake throughout the rest of her life. This removed the more serious of their financial worries.

In Woodlawn Cemetery, Titusville, is a beautiful monument, gift of the late Henry H. Rogers, of the Standard Oil Co., marking the last resting place of Colonel Drake. The body, buried first in Bethlehem, Pa., where Colonel Drake died in 1880, was moved later to the Woodlawn Cemetery. The monument was unveiled October 4, 1901.

As is well understood, the title of colonel by which Mr. Drake is best known, was not an official one at all, but was applied to him by the men who engaged him to undertake the oil well drilling project and it stuck to him. Even on the monument in Woodlawn Cemetery the name is inscribed, "Col. E. L. Drake."

Uncle Billy Smith, who was Colonel Drake's principal assistant in the drilling venture, owned a farm in Butler County, Pennsylvania, and oil was found all around it, but only dry holes were drilled on the Smith land. Uncle Billy was unembittered by the fact that he received no share of the riches which the well he drilled enabled others to gain, although the farm had to be mortgaged to relieve financial troubles that arose. He operated a blacksmith shop near Tarentum, Pa., at the time Colonel Drake employed him and after two years' service with the colonel he returned to his forge there, later retiring to his Butler County farm.

Carpenter and Soldier

Samuel Smith became a carpenter. War clouds were gathering while the excitement over oil was still running high, and young Sam joined the Union Army upon the outbreak of the Civil War, serving throughout the struggle. Although no longer active as a craftsman he takes pride in his well-kept tools, which he can handle with the skill of a much younger man. His hobby is his vegetable garden, which is pointed out as a model.

The reclining chair in which Colonel Drake, as an invalid, passed most of the time in his last years, is among the relics to be housed in the proposed museum room. Another is the working barrel used in drilling the Drake well. Then there is the anvil with which Uncle Billy shaped the primitive drilling tools. Other relics include a piece of the ladder used at the Drake well, priceless letters and records, and early oil well equipment. A piece of the pipe which Colonel Drake drove down to the rock to serve as casing is preserved. The casing now projecting from the well was sunk by David Emery in 1888, when he deepened the hole, originally 69 feet, to the third sand.

It is believed the program framed for preserving the old well site and for establishing a Drake Well Memorial Park will receive the instant approval and support of oil men everywhere and that there will be an immediate and generous response to the request for subscriptions to the fund. Confidence is expressed that to stir oil men of all fields to prompt action they need only be told that existing remnants of the historic well are threatened with extinction.

For the convenience of subscribers a subscription blank is printed on this page. This may be clipped, filled out as indicated and mailed to W. R. Boyd, Jr., chairman, American Petroleum Institute, 250 Park Row, New York, N. Y. It will be noted that a check for the amount subscribed may be sent with the subscription or a pledge may be made, with the date of payment or payments.

DRAKE WELL MEMORIAL PARK FUND

....., 1931

I hereby subscribe $ ..... toward the fund for preservation of the Drake well site, to be paid on ....., 1931, and ....., 1931.

Cash herewith, $ .....

Signature .....

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Fill out and mail to W. R. Boyd, Jr., American Petroleum Institute, 250 Park Ave., New York, N. Y. Make checks payable to "Drake Well Memorial Park Fund."

NEW WORLD'S CASING RECORD ESTABLISHED

(Continued from Page 24)

inch 22.5-pound casing up to the present time and it is probable that another string may be landed after additional hole has been made upon the resumption of drilling on July 1, 1931. This well was started and completed with rotary equipment and was cored continuously after reaching a specified depth. From 6,350 feet to 9,629 feet, 4½-inch drill pipe and 7⅞-inch Hughes Hard Formation Core barrels were used. In No. 17 Weisel in the Santa Fe Springs Field the Standard landed 7,956 feet of 9-inch.

The Dabney-Johnston Oil Corp. is pretty well up toward the top of the list as far as 8⅝-inch casing is concerned as it landed 7,330 feet of this size pipe in No. 39 Signal, which was carried down to 8,271 feet before being suspended. The outstanding records for 6⅝-inch casing are held by A. T. Jergins and the Petroleum Securities. The former landed 7,997 feet in No. 28 Signal, a deep well in the Long Beach Field, and the latter 7,283 feet in No. 1 Kale, a deep well in the same district, which was carried down to 7,500 feet before suspension. The Shell Oil Co.'s No. 11 Nesa in the Long Beach Field with a string of 5¾-inch landed at 9,144 feet ranks just below the Standard's No. 1 Mascot, which as mentioned above cemented a similar string at 9,302 feet. Following these come the Shell's No. 1 Williams, a wildcat in the Semitropic area of Kern County, and the Chanslor-Canfield Midway Oil Co.'s No. 2-A Hobson, a wildcat located about midway between the Ventura Avenue and Rincon Fields of Ventura County. The former, bottomed at 9,700 feet, has a string of 5¾-inch landed at 8,575 feet, while the latter has casing of the same size cemented at 7,479 feet. The record for 4¾-inch casing is held by the Star Petroleum Co., which has a well, No. 2 Colby, with a string of this diameter set at 8,480 feet and a total depth of 8,675 feet. It is quite likely that additional records covering drilling progress and the landing of longer strings of pipe will be made during the course of the next several years in the development of the Kettleman Hills anticline. Other deep areas in California may also be expected to contribute to the advancement of drilling technic both with respect to the method of drilling and the amount of pipe landed upon the conclusion of work.

ROCKY MOUNTAIN AREA

(Continued from Page 111)

well standing at 3,345 feet in its No. 50 Whiteside, NW SW SW, Section 9, which probably will be drilled on down to the Lakota. Texas Production Co. also has acreage in the field which has not been produced from the Dakota or Lakota. Below this horizon is the Morrison and the Sundance. The last named is a good producer in Salt Creek, but never has been tested in the Big Muddy. The Ohio well also has an important bearing in the possibilities in the lower formations on the Geary and Midway Domes which lie between Big Muddy and Salt Creek.

Natrona County

Midwest Refining Co.'s No. 11 Middy, C NE NE, Section 23-57-79, in which the Dakota and Lakota are the next objectives, is drilling at 5,744 feet in the Mowry shale and is having some trouble from caving formation. It has less than 150 feet to go to reach the Muddy, if it is in place. Cuyler Oil Co.'s No. 1 Heery, SE, Section 23-36-85, Powder River, is drilling at 225 feet.

Carbon County

Petroleum Exploration Co. of California's No. 1, NW SE SW, Section 29-23-88, Buck Springs Dome, is drilling at 2,550 feet. It is understood that Ohio Oil Co. is financing the drilling of this well and furnishing the pipe and that Jenson Coal Products Co. has an interest.

Fremont County

Producers & Refiners Corp.'s No. 10, SE NW SW, Section 14-32-95, Big Sand Draw, the rotary test of all horizons below the big gas in the Frontier, has been cored to 4,894 feet and reamed to 4,860 feet. The horizon is not identified but at 4,386 feet is supposed to have passed out of a sand in the Morrison which had a heavy gas pressure. Texas Production Co.'s No. 1-A State, SW SW, Section 36-34-95, Alkali Butte, is standing cemented at a total depth of 4,485 feet. Lander Corp.'s No. 2, NW NE, Section 35-33-99, Bartram Gap, is reported drilling at 1,250 feet in the red beds.

Big Horn County

Ohio Oil Co.'s No. 1 Smith, Lot 61, Section 33-56-97, Garland Dome, is drilling at 1,275 feet.

Washakie County

Ohio Oil Co.'s No. 1 Strothers, SW SE NW, Section 19-45-92, Neiber Dome, is standing with the 15½-inch cemented at 782 feet while additional water wells to supply the big rotary rig are being drilled.

Johnson County

Kaycee Dome Syndicate's No. 3, C SE SE, Section 4-43-82, Kaycee district, is drilling below 2,150 feet with the second break in the Madison lime as the next objective and expected within the next 200 feet.

MONTANA

Severe storms approaching the nature of a blizzard have spread over northern Montana during the week and little progress is reported at any of the wells. There were no completions or new operations reported in the Kevin-Sunburst or Border Fields. In Rosebud County, Prairie Oil & Gas Co.'s No. 1-X, Contract 3, NE SW NW, Section 26-10n-39, Porcupine Dome, is bottomed at 2,415 feet and preparing to cement the 12½-inch to shut off the large volume of water found in the several tests in this horizon. In Carbon County, Ohio Oil Co.'s No. 1 Souders, C SW SW, Section 2-7s-21, Dry Creek, is bottomed at 1,340 feet and waiting for rotary crew, and its No. 1 Montana Industrial, SW NE, Section 11-7s-21, is drilling at 4,255 feet in the Frontier.

UTAH

Utah Southern Oil Co.'s No. 1 Balsey, C NE NE, Section 31-23-21, Salt Valley Dome, is coring and drilling in salt at 950 feet.

Runs From the Fields

Daily average pipe line runs from the various pools in the Rocky Mountain area during the week ended March 28 were as follows:

WYOMING

Salt Creek	24,840
Big Muddy	2,080
Byron	10
Dallas-Derby	750
Dutton Creek	110
Elk Basin	710
Ferris	40
Frannie	920
Grass Creek	2,200
Greybull	10
Hudson	200
LaBarge	1,520
Lance Creek	240
Lost Soldier	2,170
Lovell	10
Oregon Basin	1,320
Osage	1,180
Rock River	1,980
Poison Spider	270
South Casper	220
Teapot	30
Total Wyoming	40,810

MONTANA

Buckley-Border	760
Cat Creek	1,070
Dry Creek	870
Kevin-Sunburst	4,450
Lake Basin	50
Pondera	1,690
Total Montana	8,890

COLORADO

Florence	440
Fort Collins	970
Iles	1,040
Orchard	350
Moffat	980
Rangely	50
Tow Creek	370
Total Colorado	4,200

NEW MEXICO

Rattlesnake	1,155
Hogback	460
Table Mesa	80
Artesia	591
Cap Rock	515
Getty	175
Hobbs	31,634
Jal	939
Lea	2,411
Eunice	2,881
Texas Pacific area	235
Total New Mexico	41,076
Total Rocky Mountain	94,976
Total previous week	97,657
Difference	2,681

ORDER READY FOR EAST TEXAS PRORATION

(Continued from Page 21)

tential of 49,000 bbls. and 18,487 bbls. allowable under proration.

Mr. Richmond has been a superintendent at the Powell Field, where there are Woodbine sands and where water caused "channeling" and in Mexia "coning," he said.

Absence of proration at Powell caused the field to be depleted rapidly due to water channeling.

Mr. Richmond said calculations as to capacity of underground reservoirs are guesses, but he believed them fairly accurate.

"East Texas could be more easily estimated because it is a sand field. If East Texas is thrown open the field would not last 10 years, or nearly that long.

In his opinion the Yates Field could not produce more than 100,000 bbls. daily without endangering it, and the Crane-Upton Field 30,000 bbls.

The Yates Field of 20,000, Mr. Richmond said, would produce 35,000 bbls. an acre if not drawn out too fast.

To Commissioner Smith he said he believed wells in the Yates Field could be closed in 100 per cent without injuring them, whereas in some fields it would kill the wells.

Judge Hunter brought out that Mr. Richmond believes that at 140,000 bbls. a day production the Yates Field would begin to produce water to a large extent and soon affect all the wells.

North Texas

L. V. Hull of Wichita Falls, umpire of the North Texas district, followed, saying there are 15,329 wells in the 8½ counties in his district and all except 6 are under proration. There are between 7,000 and 9,000 small or marginal wells with production of less than 4 bbls. a well, wide open and not restricted by proration. Some are producing water. If shut in 35 per cent would be destroyed by water, Mr. Hull said, and they will live at least 10 years if permitted to produce. These particular wells average 2½ bbls. a day and in 10 years the loss would be large. The lifting cost is 35 cents, not including any other expense or royalty. The average price is 63 cents and it means a loss.

Mr. Hull said the potential of his district is 92,428 bbls. daily, with an allowable of 54,550 bbls. Northern Young County is being prorated 70 per cent, running only 30 per cent due to limited market outlet influenced by the production of flush areas. His district could safely produce its potential, as all are settled wells. There are about 200 wells being abandoned because they are unprofitable at present prices, and further price reduction would mean 2,500 more wells abandoned.

Replying to Mr. Moody, he said he thought flush production had more to do with the price than importations. He said proration would save the small well owner.

Ranger District

John M. Gholson of Ranger, the next witness, is chairman of the west central proration district with 9,000 wells, of which 7,000 are marginal and not subject to proration and whose production is less than 3 bbls.

The last week or two some 200 wells have been plugged or are being plugged, he said. Under a fair price, he said, these wells could continue to produce profitably for 10 years. Their closing would cause a loss of 50,000,000 bbls.

Mr. Gholson said all expense amounts to about 60 cents a barrel and the oil now sells for about that price, being the finest of lubricating oils. Gas is conserved in that field.

Answering Mr. Moody, he said these shallow wells could safely produce to capacity without doing damage if there was an outlet. The price has been $2.25 and once was $3.50.

"Is not the need of proration to raise the price?" asked Mr. Moody.

"My position is that these wells must be plugged if the price continues to drop and thus waste or lose the oil those wells would produce," replied Mr. Gholson.

Mr. Gholson testified that on January 1 there were 1,076 disconnected wells in his district, having a potential of 16,000 bbls. daily. Now there are 1,700 bbls. daily of distress oil. Under proration the 16,000 bbls. had been reduced since January 1 to 1,700 bbls., and still working on the list.

The whole result, Mr. Gholson said, is to effect ratable takings so as to keep wells open and protect the small man against the big. The latter usually has a market outlet.

Howard-Glasscock Area

Mr. Tomlinson, oil producer and geologist in the Howard-Glasscock Field, having 532 wells of which 117 are 10-bbl. or less, said it is necessary to keep these wells pumping, otherwise many would be lost through water encroachment. The potential of that field is 78,000 bbls. and the present allowable is 25,000. Cost of pumping is about 30 cents a barrel and the oil brings about 35 cents.

"Reductions and continued low prices would cause the abandonment of the 117 wells and the salvage of the equipment," said Mr. Tomlinson, "but if kept going they would last about 10 years and produce 1,500,000 bbls." He said proration has provided fair takings and was started in that field voluntarily before the commission ordered it.

"Proration has enabled us to continue, as it has every other producer, on an equal footing," said Mr. Tomlinson. "Without it we would have been denied an outlet, to our loss and the royalty owners', as the adjacent leases would have sucked it up as we stood idle."

"If the present prices remain for two years or go lower all the small wells will be shut down," said Mr. Tomlinson, who refused to say he favored proration to boost prices, declaring it to be a conservation move. He said storage involves waste from fire and evaporation. Proration started voluntarily in his field before any price decline, he said.

Lloyd Price, appearing as attorney for the Arkansas Fuel Co. with large holdings in the Lathrop Field, brought from Mr. Tomlinson that he favored prorating East Texas and that it probably would keep his outlets open. He said East Texas will have to come to it.

Charles L. Harty asked to show proration is never heard of as long as prices are up. The witness said if there is no waste there is no need of proration.

Panhandle District

H. J. Corcoran of Pampa and Fort Worth, proration umpire for the Panhandle district, with 1,980 wells, all under proration, testified that 840 of these wells have less than 20-bbl. potential and 450 below 10 bbls.

"Proration has prevented waste through ratable takings," he said, as he gave the usual explanation of conservation. Since September, the 350 disconnected wells have been given connections and given an outlet, "which is attributable to proration alone." Storage produces waste, he said, through evaporation and fire hazard, with a loss of 3 per cent a year. "The most valuable oils evaporate the quickest," he said. "Fire, explosion, lightning, leakage, tanks eaten out by sour crudes, all contribute to storage losses. "The best storage is underground, where nature put it," he said, after which he told of the attendant gas wastage and loss of oil.

Mr. Corcoran's testimony was that the true potential of his district is 110,000 bbls. and the allowable 37,000. The expectancy of the small wells is three years with 1,350,000 bbls., which would be lost through drowning if they are shut down. The field cost of lifting is 40 cents with a price of 55 cents graded down. With royalty, overhead and taxes added, these wells are producing at a loss. If a further price reduction came 50 to 60 per cent of the Panhandle wells would have to close and if continued for any length of time, "they would pass out of the picture," said Mr. Corcoran.

"Proration protects the small man and prevents waste."

To Mr. Moody, Mr. Corcoran denied price increases would take off proration, declaring some of the producers told him they never would return to open flow. He did not of his own knowledge know that the lifting cost is 40 cents a barrel, but had been told it was. Much of his testimony, he said, necessarily was based on opinion.

"Why were not these 350 wells destroyed when they were shut down?"

"Because they were mostly in Gray County, the newest area. Wells flush or semiflush are more susceptible of pinching as contrasted with stripper wells."

Mr. Price could not get Mr. Corcoran to explain why the Panhandle allowable is 33 per cent while that of Van is but 1 per cent of the potential. He said he did not know nor did he know anyone who could explain this variance as a measure to prevent waste. He admitted that a certain amount of storage is essential to conduct of the oil business.

Replying to Mr. Harty, the witness said proration would not be needed if laws exist and are enforced inflicting punishment and receivership for the wastes described as prevailing without proration. Umpires inflict no punishment on a producer running more oil than his allowable, Mr. Corcoran said, but report them to the commission, and an offer of a higher price would not cause the allowable to be increased.

East Central Texas

E. L. Smith of Mexia testified that he was familiar with the Mexia, Powell, Richland, Wortham and Nigger Creek Fields, where there are 900 marginal wells averaging about 480 per cent water and making an average of 10 bbls. a day. If shut down, the wells would be abandoned and lost. It costs 70 cents to lift the oil and it is bringing 60 cents a barrel. These wells have four to five years' life left if not destroyed.

Answering Mr. Lawrence, he said fields as old as these usually go to water and their present condition is not unusual. Pinching retards the water, he said, and Mr. Lawrence insisted it is edge water, taking the place of the oil as the latter is withdrawn from the reservoir. He said since these wells are producing their potential, proration would not help there.

To Mr. Church, Mr. Smith testified as an operator with holdings in East Texas. He wanted his land prorated to conserve

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Resuming, Mr. Smith said he is willing to have his flush production prorated. He said where a well in the Woodbine sand was opened, water came in.

H. H. Fitzpatrick, umpire in the fields of Darst Creek, Guadalupe County, and Salt Flats, Caldwell County, testified as to the potential there, showing a much smaller allowable. He said water follows open flow and waste is prevented by proration.

East Texas Divided

East Texas was divided into two areas at Thursday's session under the report of the Texas central proration committee, one district to be known as East Central Texas, including Van, and given a daily allowable of 52,050 bbls., and an East Texas district to consist of the new production area, including Gregg, Rusk, Smith and Upshur Counties, and allotted 50,000 bbls., with an increase of 5,000 bbls. a month, starting May 1 until 70,000 is reached, which would be August 1, probably the end of another proration period.

A separate report was made for the proposed East Texas district by a committee of operators headed by W. B. Hamilton. It recommended a stepped up allowable to reach 90,000 bbls. daily by July 1. Lloyd Price, attorney for the Arkansas Fuel Co., announced that a proration agreement had been made with the field operators' committee for the Lathrop area. The agreement was made with a field committee headed by W. B. Hamilton and was approved by the central proration committee.

The agreement calls for the northern or Lathrop area to produce 15,000 bbls. the first 30 days, 20,000 the second 30 days and 25,000 the third 30 days, with a committee and a field umpire answerable only to the Railroad Commission and not to the central proration committee. The oil will be produced under ratable takings, Mr. Price assured the commission, and said his company, Yount Lee and Amerada owned practically all the leases in that area and that he thought they would agree to it. Judge Beeman Strong for Yount Lee said he had no objection to this arrangement in view of present conditions but that he was not surrendering his views that the commission has no power to prorate.

Mr. Price said his company, having its own transportation line and refineries, knew the 50,000-bbl. limit set for the whole area would not be sufficient and he then started to make the agreement with the committee to produce the oil given, which will be done without waste.

Mr. Penn approved the agreement as a reasonable compromise and expressed the hope other operators in East Texas would fall in line.

Charles L. Hardy wanted to know if the royalty owners had been consulted and Mr. Price answered in the negative, whereupon Orville Bullington asserted that "what is good for the lease owners is proportionately good for the royalty owners."

Mr. Estes declared "this alleged agreement" was not approved by his committee, representing the Lease, Royalty and Producers' Association of East Texas, but "was made with the Hamilton committee, which has no standing here or there. Mr. Hamilton and his committee slipped around and made this agreement, passing out some pie to weaken our side with an idea of letting the devil take the hindmost. Things like that caused the Boston tea party and we will have one in East Texas if they keep this up."

Hamilton Report

W. B. Hamilton said he appeared as chairman of a committee appointed by 75 operators who met in Dallas, none of whom are members of the central proration committee. He said his committee had a report of the allowable for East Texas, different from that of the central committee.

E. L. Smith, of Mexia, made a statement for the committee covering a 90-day period, starting with 55,000 bbls. the first 30 days, 75,000 bbls. the second 30 days, and 90,000 bbls. the final 30 days. The field would be divided into three districts, lower or southern, to be known as the Henderson area; the middle district, the Kilgore area, and the northern, the Longview sector. The districts would include Rusk, Gregg, Smith and Upshur Counties. Each of the three districts would select its own operators and umpires and operate under the supervision of the railroad commission.

Replying to Mr. Moody, Mr. Smith said the landowners were not present at the committee session, but many leaseholders were there. Mr. Smith owns leases and Mr. Hamilton is one of four who made a contract to sell 1,000,000 bbls. of oil, and "was willing to prorate it with his neighbors," it was brought out by Mr. Moody.

Mr. Estes insisted on being heard, he said, in the name of 200 operators and 5,000 East Texas royalty owners who formed the committee and "who came here Tuesday and were sent home without being heard."

Myron G. Blalock declared that the hundreds of people in East Texas interested in millions of dollars' worth of property were thrown off their guard. They came here under the wording of the hearing notices and their large interests should not be so lightly treated, but they should be allowed another day, and under the specific notice, permitted to present their case properly. They should have a reasonable length of time to digest the figures presented and given a later hearing to dispose of their interests.

Mr. Church.—Another hearing would produce the same facts, which we can do, so why repeat it? We can save time and effort. The attorneys for East Texas have been here participating and can produce their witnesses.

Penn Cross-examined

Mr. Moody then began the cross-examination of Mr. Penn, covering the history of the organization of the proration committee in Dallas and Houston last June with independents and all branches of the industry represented.

Mr. Penn asserted that oil and gas conservation was the object of the organization and "price was not mentioned and was not the actuating influence."

"Why was price not discussed?"

"Because our attorneys told us we could be concerned only with conservation."

"Are you not interested in prices?"

"Yes, all oil men are. We discussed prices as individuals. Unfortunately, we can not consider price in fixing proration."

Mr. Penn emphatically denied he was under any kind of an obligation to the Humble, and had avoided accepting any favors from it. It was true that proration was first proposed by the president of the Humble, "and I opposed it," said Mr. Penn, "until I saw it would reduce waste."

"I don't want to sell my oil at the ridiculous price you East Texans are taking for it," Mr. Penn declared.

"The cut in oil was not due to any panic, but to the large production of Texas, and unless it is prorated or curtailed the price will go to the bottom," said Mr. Penn.

Mr. Penn enumerated a number of East Texas wells which he said have no outlets, while others have, making "unequal withdrawals, and underground waste."

Mr. Penn charged that East Texas is ruining the market by selling oil at from 32 to 45½ cents a barrel compared with $1.07 three or four weeks ago.

"Would East Texas oil sell for $1.07?" asked Mr. Moody.

"Yes, if you had not flooded the market and continued to run wide open. Marketing crude on a cutthroat basis, as in East Texas, has brought the price down steadily," said Mr. Penn.

Mr. Moody had the import figures for the last two years read, 120,000,000 bbls. in 1929 and 125,000,000 bbls. in 1930, all in terms of crude. "Gasoline importations doubled because your antitrust laws will not permit the operators to make agreement," Mr. Penn said.

"Are you in favor of the antitrust laws?"

"Not as applying to producing natural resources."

"You would turn them loose to make prices to be paid by all our people?"

"If the antitrust laws continue, only four or five big companies will be left. I want to save competition through the independents, of which I am one."

Under questioning by Mr. Moody at Friday's session, Mr. Penn said he did not know the potential of the East Texas Field; that the field has not been thoroughly defined; that the proper oil and gas ratio for that field has not been determined; and its possible market outlet has not been definitely determined.

Mr. Penn.—Permit me to add this: That in every field in the State that has had proration, it has been applied before the field was fully defined and before the potential of the field was fully known and before the market was fully known.

Mr. Moody.—Then your figure of 50,000 bbls. a day recommended as the outlet for that East Texas area is an arbitrary figure, because you didn't have this information?

Common Purchaser Law

Mr. Penn.—No, it is suggested in view of the best information in the hands of the committee as to the amount of oil that could be taken from East Texas in compliance with the provisions of the common purchaser statute and the general provisions of proration as practiced in Texas.

Mr. Moody. — Since you mention the common purchaser statute, do you understand from that that you can force purchasers of crude oil in this field or any field—that is, purchasers coming under that statute—to take ratably from the producers in the field and without discrimination between them; is that correct? That is what you mean by ratably taking?

Mr. Penn.—That is part of the definition.

Mr. Moody.—And ratable taking is a thing to be enforced under the common purchaser act, and not necessarily under proration?

Mr. Penn.—Proration is necessary to ratable takings. It is necessary to insure ratable takings.

Mr. Moody.—Nothing is in the common purchaser law regarding proration, is there, as you remember?

Mr. Penn.—I don't know what you would call it if not proration. It says the takings by any common purchaser from a field shall be ratably and without discrimination as between producers in that field and without unfair and unreasonable discrimination as between the various fields of the State, considering grades of oil, location and so forth.

Mr. Moody.—And including markets also? That would be taken into consideration?

Mr. Penn.—I don't remember that is in there.

Mr. Moody.—I don't mean the word "market" is in there, but you do not understand that one man would have to give up his market to another man under that law, if he had a market?

Mr. Penn.—If he is buying oil, he has to take the oil ratably.

Mr. Moody.—You wouldn't understand

FORMER GOVERNOR MOODY OFFERS LEGAL ARGUMENT AGAINST ORDER

Mr. Moody, at Saturday's session, said:

"I have two propositions of law that I desire to submit to the commission as bearing on its power to enter an order in this case.

"Before the commission can enter any order, it might make a classification between those guilty of waste, if there are any so guilty, and those who are not guilty of waste. If the order makes unreasonable discrimination or if it fails to classify between those violating the conservation statute, if any, and those not violating it, the order is void. Any order entered by the commission must stand within itself, and find its basis in the testimony presented, for in any subsequent court proceedings on the order, the courts are without power to modify the order, and cannot rewrite it for the commission.

"I submit this first proposition: That the proponents of proration at this hearing have failed to present any evidence on which the commission can enter an order and make a proper and reasonable classification between those who may commit waste and those who may not commit waste. Your order cannot unreasonably discriminate, and you cannot make an order to restrict the production of the producer who is producing without waste. The proration committee has given you no testimony on which you can make the necessary classification and discrimination.

"The second proposition is based on the principle that you are asked by the proponents of proration to enter an order and by its terms force the operators of the East Texas Pool to do that which they could not do by agreement under the laws of this State without being subjected to the payment of heavy penalties, fines and even criminal prosecution, for the antitrust laws of the State would prohibit an agreement restricting the production of a commodity and thus restraining trade.

No Authority, He Says

"The legislature has given you no authority by an order, to require producers of crude oil to do that which they could not do lawfully by agreement. The effect is that the proponents of proration ask you to set aside the operation of the antitrust law and you are without the legal authority to do so. Under the constitution of this State, no one can suspend the operation of the law except the legislature.

"I refer you to the recent case of Commercial Standard Insurance Co. vs. the Board of Insurance Commissioners, the opinion written by Judge Baugh of the third court of civil appeals. This was a suit to restrain an order of the Board of Insurance Commissioners, limiting the payment of commissions to local fire insurance agents. The effect of that opinion is that the companies could not agree to limit the commission without violating the law, and in the absence of express authority from the legislature, the insurance commission has no power to require the companies to do that which they could not lawfully do by agreement.

No Testimony of Waste

"There is no testimony in this case of waste being committed in the East Texas Field within the contemplation of the statute. The legislature has left you without an adequate definition of waste, and in so far as it is defined in the statute, there is no testimony to show waste within the meaning of that definition. The statement in the statute that waste is taken in its ordinary meaning is void for uncertainty, and you cannot make an order to prohibit waste except it be of the kind specifically defined in the statute. You do not have the authority to make your own definition of waste under the general provisions of the statute. In support of this proposition I cite the holding of the supreme court that the statute giving the commission power to prevent 'abuses' by railroads was held void for indefiniteness.

"It is my opinion, therefore, that you cannot enter an order, for you do not have the testimony on which you can base a classification in your order, and your order must make a reasonable classification; for the further reason that you do not have the authority by your order, on the theory of conservation, to require the producers to do that which they could not lawfully do by agreement, and for the still further reason that you have no testimony to show waste within the valid definitions of the term contained in the statute."

that under that law, if East Texas has a market for its oil it would have to give up its market for Louisiana or Arkansas, do you?

Mr. Penn.—As a matter of conservation under the laws of Texas requiring the railroad commission to conserve the oil and gas supply, it is necessary that proration be had, that suitable allowances be fixed as between the fields and that all oil be taken ratably. As I said awhile ago, with no unjust or unreasonable discrimination between fields.

"Dictatorial," Says Lacy

Judge Edwin Lacy of Longview, speaking for Gregg County and the Lathrop area, said Thursday's agreement was between four operators and the proration committee and protested it vigorously. He said 90 per cent of the Gregg County production is in the Lathrop area, embracing 1,000 owners of farms of from 40 to 500 acres, 500 lease owners and 1,000 royalty owners.

Mr. Moody then resumed his cross-examination of Mr. Penn. Mr. Moody read a telegram from the Sinclair company, denying Mr. Penn's statement that the company imports oil. The message said Sinclair imports neither oil nor refined products. Mr. Penn said it formerly imported oil.

Once again the debate waxed warm when Mr. Penn exclaimed: "Proration is to force ratable takings and prevent waste."

"That is your opinion. We think proration is to raise the price."

As Mr. Moody continued to name companies which he said would take oil, he asked if the Sinclair had not agreed to take 25,000 bbls.

"It agreed to take something," replied Mr. Penn, "but last Friday it disconnected a well and then reconnected at the request of your committee to help your cause."

Mr. Harty questioned Mr. Penn to show that the formula used in proration is unfair to the small acreage units compared with the large acreage. Mr. Penn denied it, saying each 20-acre unit has its precise share of the potential.

"The facts refute your hypothesis," said Mr. Penn.

Mr. Penn asserted that the committee had sent letters to every known purchaser of oil, refinery and pipe line that would take oil ratably or otherwise, in order to fix the allowables.

"Yes, but you wouldn't include nominations not ratably based," Mr. Harty declared, and Mr. Penn retorted, "You can't separate proration from ratable takings."

Mr. Bullington brought out that from June to March the Panhandle had been cut by 50 per cent as compared with 20 per cent on the Gulf Coast. Mr. Penn answered that Gulf Coast had been prorated and Panhandle had not, that without proration Gulf Coast could have sold 250,000 bbls. daily. West Central had been prorated 50 per cent, "the largest contribution made to proration," commented Mr. Penn, as Mr. Bullington showed other reductions. Mr. Penn said the Gulf Coast, West Texas and Southwest Texas had been further reduced as specifically recommended in the proration committee's report.

Mr. Penn replying, said if East Texas is prorated the State will come nearer being perfect for the first time.

Mr. Penn's opinion was that if the State would take over proration under appropriations giving it its own technical staff, proration would be more satisfactory.

If all the other fields were opened up East Texas would have no market for its oil, Mr. Penn declared.

He contended that unequal withdrawals of oil are waste. The average oil field, such as East Texas, would produce 10,000 to 20,000 bbls. an acre. Taking oil from a neighbor who has no outlet is waste, he said. Coring and channeling also are underground waste. It is not necessary to know the potentialities of the East Texas Field to treat the field fairly as to an allowable. If there is ratable taking, the 50,000-bbl. allowable will prevent loss underground. Ratable taking is part and parcel of proration, continued Mr. Penn, and one cannot succeed without the other. Hundreds of wells will be completed soon without any market whatever without ratable taking. A larger allowance in East Texas would cause unratable takings in other fields. An increase of allowable would cause abandonment of wells, loss of taxes and great distress in the industry and to the people generally. One small well, the Daisy Bradford in the Lathrop Field, has been abandoned because of flush production there, he said. That was physical waste. This well was producing 15 bbls. but due to the low price in the field it became unprofitable to operate, which caused waste.

C. F. Roeser Testifies

C. F. Roeser, independent operator of Fort Worth, told of operations in the Cook Pool in Shackelford County, saying no gas has been wasted with the production of the oil under the back pressure used for the last four years, believing the gas will increase the lift of the field. He has one large well in East Texas and is drilling others, he said. Waste prevails there because of the unequal withdrawals. It creates water encroachment and loss of gas energy, which could be prevented, "and I am strong for proration. Unequal withdrawals cause gas to be taken from under adjoining leases and reduces the oil recovery, and also results in channeling. If the wells are produced in a regulated way water might not come for five years, whereas if the wells are produced in an unregulated way, it will come in six months."

On redirect examination Mr. Roeser estimated that good conservation calls for 500 bbls. or less per well in East Texas, and there are now 90 wells, a total of 45,000 bbls. Otherwise it will mean water encroachment from the west side and will drown hundreds of wells.

Mr. Moody said the antiprorationists were not prepared to offer testimony but could have submitted evidence showing the potential possibilities, market outlet and development, and the quantity of oil that could be produced without actual physical waste. To do it, he asked the adjournment until April 8. Chairman Terrell denied it.

Messrs. Moody, Allred, Harty, Beauchamp and Lawrence charged that proration is merely a subterfuge to raise the price and that no evidence was offered justifying it in East Texas.

Judge Hunter argued that proration must be put on a sound, economical basis, instead of the present unsound one, or ruin will follow. He submitted an elaborate plan of proration, which he said would be fair.

East Texas offered 300 telegrams protesting proration and repudiating the W. B. Hamilton committee report as not representing the sentiment of the operators there.

THREE BIG IMPORTING COMPANIES OFFER REDUCTION OF IMPORTS

A feature of Wednesday's session was the assurance from three large concerns of reductions in imports of both crude and gasoline.

The Standard of New Jersey advised the commission of a reduction of 45,000 bbls. daily compared with an average of 60,000 bbls. a day last year. The Gulf has cut its imports 25 per cent and the Shell reduced its gasoline imports 50 per cent.

Mr. Beauchamp and Mr. Moody invited statements as to the reduction of imports, but gave notice that East Texas would be satisfied with nothing less than the figure named in the Capper bill.

P. O. Settles, for the Gulf company, said the 25 per cent reduction in crude imports already had gone into effect and that his company has never imported gasoline or any refined products.

W. C. Teagle, president, telegraphed for the Standard of New Jersey as follows:

"During 1929 we imported an average of 67,500 bbls. a day. In 1930 our average imports were 60,000 bbls. a day, almost entirely crude oil, no gasoline whatever being imported during either year. We now have reduced, effective April 10, our imports to average of 45,000 bbls. a day for 90 days and after that they will be conditional on the industry's success in controlling domestic production and on similar action by other producers in those countries."

Shell's Position

E. G. Allen offered the following message from President U. deB. Daly of the Shell:

"The position with regard to imports of the Shell Union group of companies, namely, Shell Oil Co., operating on the Pacific Coast; Shell Petroleum Corp., operating in the Middle West and Texas, and Shell Eastern, operating on the Atlantic Coast, is as follows:

"1. The Shell Eastern is purely a marketing company and was organized to take care of the surplus production of the Shell Oil in California and Shell Petroleum on the Gulf Coast. As a matter of convenience and in order to simplify the necessary shipping arrangements, an arrangement was made with the Royal Dutch-Shell, by which Shell Eastern draws a large part of its requirements of gasoline from the Curacao refinery of the Royal Dutch-Shell and in turn the Royal Dutch-Shell takes an equivalent quantity of gasoline from Shell Petroleum and Shell Oil for export.

"2. This arrangement is based on and is being carried out on the basis of an exchange of naphtha, barrel for barrel, and in addition, Shell Union sells considerable quantities of gasoline and casinghead for export, so that the net result of these transactions is that on balance the Shell Union exports more gasoline than it imports.

50 Per Cent Reduction

"3. In view of the request of the independent producers for a reduction of imports the Shell Union has perfected shipping arrangements by which its imports of gasoline will be reduced by at least 50 per cent for 1931 as compared to 1930.

"This, however, will entail supplying the Shell Eastern direct from California and the Gulf with an increased quantity of domestic gasoline and therefore the available surplus of Shell Union for export will be reduced by these amounts.

"4. The Shell Union imports no Venezuela crude into the United States and its only imports of crude are approximately 2,000 bbls. daily of Panuco crude, which is imported for the manufacture of certain special grades of asphalt which it is impossible to make from any domestic crude available from the Shell Union.

"5. While the Shell Union itself is not directly concerned in any operations outside the United States, either in Venezuela or elsewhere, I am asked to state that, in February, 1930, the Royal Duch-Shell offered to reduce its production in Venezuela pro rata with any general reduction of crude production in the United States for 1930 as compared with 1929, provided the other companies operating in Venezuela would agree to a similar restriction. This offer was not accepted at that time, but has been represented since, and I understand Royal Dutch-Shell still is ready to restrict 1931 production on some similar basis."

Chairman Terrell then made the following comment:

"I am glad to receive this message. This will do some good and I hope this company and all other companies will entirely stop the importation of foreign oil."

RECOMMENDATIONS ON ALLOWABLE BY CENTRAL PRORATION COMMITTEE

A statement of the allowable was contained in the committee's report, as follows:

"Explanation should be made in regard to the nominations of the East Texas district, including Upshur, Smith, Gregg and Rusk Counties, that this committee has not received nominations sufficiently intelligible or based on ratable takings, to enable the committee to report the total of nominations.

"In this connection, the operators' committee for East Texas, at a meeting Tuesday night recommended that this area be given an initial allowable production of 50,000 bbls. a day. We consider that a reasonable and fair allowable for East Texas, and suggest that the state daily allowable be fixed at 656,058 bbls. a day, including East Texas, for the six months beginning April 1, 1931. With the adjustments for the East Texas district in May and ferred to above, the maximum allowable June and additions for East Texas, refor the State during this period will be 686,058 bbls., to be reached in August.

"This committee feels that the Railroad Commission itself should make some adjustments between the districts so as to allow more production in the Panhandle, North Texas and West Central Texas districts, thereby affording additional outlet from those marginal well areas. We suggest that this be done by the commission either on its motion or by conferences with the purchasing companies involved in those districts.

Fair, Says Committee

"We call attention to the addenda attached hereto which gives the nominations distributed by fields within the various districts to such an extent as seems necessary for this purpose. We particularly call your attention to the Yates Field in Pecos County, the Big Lake Field in Reagan County, the Refugio Field in Refugio County, the Barbers Hill Field in Chambers County, the Humble Field in Harris County, the Pierce Junction Field in Harris County and the Spindletop Field in Jefferson County.

"We recommend that the production of the Yates Field be reduced immediately from 89,500 bbls. to 70,000 bbls., and that your commission during the period of the present order limit to 70,000 bbls. each the maximum outlet from the two largest flush fields in the State, the Yates Pool and the newly developing East Texas Field, the maximum allowable for each of these fields thus being slightly more than 10 per cent of the available market outlet for the entire State. This certainly should be a fair allowance for each field, especially considering the absolute necessity of limiting the production of the State to such a point that will insure available outlet for the marginal well areas and ratable taking of oil from all areas.

Gas Conservation Urged

"This committee has been advised that the University of Texas, which owns the royalty under the Big Lake Field in Reagan County, is desirous of having the wells in the deep sand horizon shut in entirely until a market can be found for the gas produced and also until a better market can be found for the oil. We heartily indorse this position and recommend that the Railroad Commission take steps for the conservation of gas and also the prevention of waste involved in storage and in the shipping of this very light oil in tank cars.

"The nominations for this field are at present 20,000 bbls. a day, and in addition the operators are marketing considerable oil by tank car so the actual production is now in excess of 26,000 bbls. a day. Proof adduced at the special hearing on the Big Lake Field in October showed that waste would occur from

wide open production and conditions have not since changed.

"We therefore recommend that the production from the deep sand horizon in this field be limited to such point as will make the total output of the field, considering both the upper or lime horizon and the deep sand together, not to exceed 12,000 bbls. a day.

Aid to Marginal Wells

"This committee recommends that the Railroad Commission arrange for the distribution of the proposed 33,500 bbls. a day saved by a reduction in output of the Yates and Big Lake Fields combined in such a manner that the marginal well areas of the West Central Texas district in particular, and also of the North Central Texas district and the Panhandle district, may be provided additional outlet sufficiently to take care of those marginal well areas.

"In regard to the Refugio Field and to the other Gulf Coast fields above mentioned, we wish to suggest that this area might make a more substantial contribution to the cause of conservation. On recent tests the production of the Refugio Field was reduced to 13,045 bbls. a day by the application of one-fourth inch chokes to all wells in the field. We do not now recommend this figure especially, but we call your attention to it as indicating what may be accomplished. Present production in the Refugio Field is approximately 32,000 bbls. a day.

"It is the feeling of this committee that the Railroad Commission may well take into consideration the possibilities of reducing production in the Barbers Hill, Humble, Pierce Junction and Spindletop Fields. We hereby suggest that the commission call on Gulf Coast operators to continue the good work they have been doing in decreasing drilling operations and otherwise curtailing production with an ultimate goal of 140,000 bbls. daily average for the six-month period. Thus true conservation may be effected within all districts of the State by preventing the abandonment of many thousands of marginal wells, which evidence presented before the commission at its state-wide proration hearing within the last two days has indicated will occur unless substantial relief is afforded to the producers in the marginal well districts in all parts of the State.

Proration Is Essential

"Referring again to the new East Texas Field, you will observe that we have recommended for the present a flat figure of 50,000 bbls. a day, in line with the figure set by the operators' committee in that field. However, we are recommending that the commission increase the allowable production of that area by 5,000 bbls. a month until the recommended maximum of the 70,000 bbls. a day shall be reached.

"In conclusion, we wish to state that this committee considers the principles of ratable takings of oil from all districts and fields in the State absolutely essential to any true conservation program. We believe the carrying out of such suggestions as are herein contained will result in a better balance of production and market demand, assuring to every producer in the State his fair share of the market outlet, will best relieve and prevent such chaotic conditions as those with which the industry now is confronted with the State, and will tend to reduce waste by preventing further additions to the already large accumulations of oil in storage and eliminate underground waste to disproportionate takings due to the inability of all producers in every field to share ratably in the available market outlet.

"We sincerely hope the commission, by further development of needs and requirements by the purchasers and consultation with district advisory committees and producers, may be able to make these adjustments."

Allowables Itemized

The committee appended the following itemization of unit allowables in the two pools largely cut:

West Texas—Yates Pool, Pecos County (reduced to 70,000 bbls. recommended), 80,500 bbls.; Crane-Upton, 18,658; Gulf McElroy, 6,000; Ector County, 7,000; Howard-Glasscock, 27,073; Winkler County, 48,500; Big Lake (reduced to 12,000 bbls. recommended), 20,000; miscellaneous West Texas, 16,700; total, 232,931 bbls.

Gulf Coast—Refugio, 32,000 bbls.; Pettus, 7,000 bbls.; Sugarland, 12,000 bbls.; Raccoon Bend, 10,000 bbls.; Barbers Hill, 20,000 bbls.; Humble, 9,000 bbls.; Pierce Junction, 9,900 bbls.; Spindletop, 11,450 bbls.; miscellaneous Gulf Coast, 40,600 bbls.; total Gulf Coast, 152,350 bbls. (reduced to an average of 140,000 bbls. a day for Gulf Coast area for six months by curtailment of drilling and other conservation measures recommended).

Other units set forth were: Boggy Creek, 2,300 bbls.; Darst Creek, 20,000 bbls.; Salt Flat, 12,965 bbls.; and Old Luling and Laredo 30,000 bbls.

BETTER UTILIZATION OF GAS ENERGY PLAN

(Continued from Page 24)

an excessive withdrawal of gas volume permits destructive water encroachment. However, in the latter case, the rate of oil withdrawal by volume is also important. In any case, the control of pressure through the rate of withdrawal by actual volume of free gas, oil, and gas dissolved in and associated with the oil is the most important control available to the operator and the higher the effective pressure maintained in the reservoir, the greater his percentage of oil recovery should be.

Plan to Control Pressure

The writer has called attention to a plan for controlling the mean pressure in a pool in a previous article[1] and the chief advantages to be obtained were briefly described. The plan has appeared so fundamentally sound, advantageous and susceptible of practical application as to merit further discussion.

This plan advocates limiting the quantity of gas withdrawn from the individual wells in a pool and thus controlling the decline in mean reservoir pressure. This would have the effect of allowing each well an equal opportunity to utilize the pressure which would exist in a reservoir and would prorate gas energy, thereby allowing each operator to evaluate his proportion in terms of how much oil it could directly or indirectly cause to be recovered, and the individual operator would be rewarded with a premium in proportion to his ability to combat those underground physical conditions peculiar to his property which retard the movement of oil.

It seems logical that in as much as only 20 per cent of the oil from a pool as a whole is obtained, the greater proportion of this oil must have filled the porous space in the immediate vicinity of the wells, leaving the major and more distant portions of the wells' allotted drainage areas saturated with the 80 per cent of unrecovered oil. However, the gas must have drained each well's entire allotted area and migrated over certain portions of the pool as a whole since 90 per cent of it is recovered. This difference in percentages of oil and gas recovery can be understood when consideration is given to the fact that the gas is an exceedingly mobile fluid while the oil is much more viscous and therefore the energy stored in the gas as it exists under reservoir pressure is spent in forcing the larger percentage of the less viscous gas to the wells. It should be apparent that compressed gas does not elect to force oil to the wells but rather it adopts circuitous routes of least resistance toward them in order to evade as much as possible propelling the less mobile oil along with it.

Effective Reservoir Pressure

The conclusion is therefore drawn that one well does not in general produce any appreciable amount of oil from the drainage areas of adjacent wells unless they are closely spaced or producing from quite porous or cavernous lime, but a well's percentage of oil recovery from its own drainage area will be jeopardized if the expanding gas is not controlled but allowed to migrate over considerable distances thereby promiscously expending gas energy. Therefore each well owner should be more vitally interested in the distribution and rate of withdrawal of the gas contents of a reservoir, because the volume of gas withdrawn establishes in a large measure the effective reservoir pressure and thereby fixes the oil producing efficiency of the energy contained in the compressed gas dissolved in or associated with the oil. The beneficial effects of natural water drive on oil recovery are also dependent to a considerable extent upon the rate and uniformity of gas withdrawal.

A distinction should be made between the energy of compressed free gas and that of compressed gas dissolved in or associated with the oil. It appears that free gas because of its lesser density is positioned above the oil and for the most part travels to the wells through channels devoid of oil content, and therefore the energy of compressed free gas is primarily useful in aiding to lift the oil from the bottom of the well to the surface but should be controlled in order that the resultant effective reservoir pressure may allow the energy of the compressed gas dissolved in or associated with the oil to efficiently propel the oil to the wells. However, it is impossible to segregate and control free gas in order to control pressure except in those wells which produce gas only, so pressure control in the oil wells must include a limitation in withdrawal of the combined free gas and gas dissolved in or associated with the oil. But the effect upon the wells' oil production should to a considerable extent be in proportion to that quantity of gas produced which was originally dissolved in or associated with the oil rather than to the quantity of free gas produced.

Procedure for Controlling Gas Volume

The procedure for controlling gas volumes in order to control pressure should commence when the first well is drilled in a pool and continue during the pool's period of development and as long as the wells flow their production. In order to maintain pressure in the pool as a whole, the plan would involve a drastic restriction in gas production from the first wells, allowing possibly just enough to furnish fuel for drilling and operation purposes until the majority of the wells were completed. The gas allowance per well should then be increased to whatever extent underground and market conditions appeared to justify, but in no case, in the writer's opinion, should a flush field produce in excess of 50 per cent of its gas capacity, and this percentage should decrease in proportion to the amount of reservoir pressure and especially in proportion to the quantity of gas energy available, in some cases the percentage should be as low as 5 or 10 per cent of the wells' full capacity. Since practically all oil wells produce gas with the oil then all wells might virtually be considered as gas wells which produce various quantities of oil along with the gas and as there are state regulations which prohibit gas wells producing in excess of 25 per cent of their full capacity then why should a combination oil and gas well not be subjected to some such maximum percentage of daily extraction? If gas cannot be efficiently extracted from gas wells unless their daily output is restricted then it seems logical that combination oil and gas wells to a greater extent should require the same precautionary measures for the efficient extraction of oil since the gas under pressure serves as the principal motivating agent to force the more viscous oil to the wells and the 90 per cent of gas recovery is assured and therefore can be made subservient to the percentage of oil recovery which is only 20 per cent. Proration of oil in flush fields accomplishes a retarded rate of oil and gas production and should be continued regardless of the supply and demand for oil because properly applied it is a conservation measure. The sand wells in the Oklahoma City Field apparently have been benefited by drastic reductions in their average daily oil output which tended to reduce the rate of gas withdrawal, but the lime wells have "gone to water" prematurely due to the fact that they were allowed to produce excessively during the earlier period when oil proration exceeded 50 per cent. There is also evidence to show that retarding the daily rate of oil production in the Seminole area has benefited the wells as a whole and this has occurred while the field is approaching its settled stage.

Daily Gas Allotment

Manifestly, pressure would not be properly controlled and disproportionate taking of gas energy would occur if each well were limited to the same quantity of daily gas production, because it is impossible to space wells equally distant primarily on account of surface ownership. Therefore the daily gas allotment per well should be based upon its quota of proven acres owned by the operator and a daily gas allowance applicable to each acre in the drilled pool. This gas-acre allowance should be the number of cubic feet of gas which each acre should contribute daily in order that a uniform rate of pressure decline be maintained in the entire pool. Each drilled well would then have the privilege of producing each day that amount of gas obtained by multiplying the common gas-acre allowance by the number of acres within each well location, but in no case should the well's quota of acreage exceed the leased acreage of the well owner. To illustrate: A 40-acre lease with 4 wells upon it would receive twice the gas allowance per well that would be allowed in the case of 8 wells on a 40-acre lease. Yet, an edge 40-acre lease with one well upon it should only be allowed a 10-acre allotment if the average well in the pool were on a 10-acre location. The arbitrary gas allowance per day per well might exceed that which some wells could produce on account of their structural position, but it is assumed that the gas-acre allowance would reflect the requirement of the average well in the field and consequently such a well would suffer due to its lack of gas volume but could utilize the effective pressure in the formation. In no case should a deficit in gas production on one well be credited to another well on the same property because the utilization of the additional energy by another well would permit inequitable pressure control for the surrounding wells, and the plan to allow each well an equal opportunity to utilize the same pressure would thus be frustrated.

Method of Administration

It would be necessary to periodically fix the gas-acre allowance per day of proven field because of changing reservoir conditions. And it seems logical that the operators familiar with the characteristics of the development and operation of the wells in the pool would be the best qualified, functioning as a group, to decide this allowance and all other matters pertaining to the plan, provided certain specific safeguards were made mandatory. The operators in a field functioning as a committee under the various proration plans have shown a splendid spirit of cooperation in mutually agreeing at least by a majority vote upon a solution of the common problem of overproduction, and it seems logical that they could mutually agree upon the degree to which safeguards should be applied to increase the oil recovery and gas utilization from an oil and gas pool, especially if these safeguards were specific and mandatory. It is apparent that there would be minority objections on the part of some operators to the decisions of the majority and as some of these objections might be worthy when viewed by distinterested parties, it would seem that any operator should have an opportunity to present his viewpoint to a general committee composed of competent and qualified men familiar with field problems who would decide the matter upon its merits and their decision should be mandatory upon the operators of the field. From an administrative viewpoint the plan therefore appears feasible in the light of everyday contact between individuals.

The measurement of gas volumes is a common occurrence in the field and can be accomplished with considerable precision, and it would not be necessary to know the actual reservoir pressure in so far as the mechanics of the plan would be concerned, so it would appear that the plan is entirely susceptible to practical

[1] "Gas Energy Proration to Prevent Waste." The Oil and Gas Journal, November 6, 1930, issue.

application. Undoubtedly the machinery could be set up to see that gas measurements would be fairly taken and reported and this information made available to anyone interested.

Effect Upon Individual Wells

The question quite naturally arises as to what the effect of the plan on individual wells would be through limiting their gas volumes. There would be pressure gradients from the top of each well to points in the reservoir, thereby fixing the well's drainage area. The more it would be necessary to choke the well to limit the gas volume, the less in general the later distances would be from the exposed surface of the producing stratum to the edge of its drainage area. The contour defining the edge of the drainage area would not be symmetrical about the well on account of nonuniform conditions of porosity, permeability, etc., and the slope of the superimposed contours would in general be toward the bottom of the well. The intervening stratum between the drainage contours of two wells would be under the same pressure as the edge of their drainage areas and as the intervening stratum between wells would form a network over the entire drilled pool, then the same pressure would have to exist over the entire pool in this network and therein lies the basic foundation for this plan—namely, the fact that a reservoir has a certain uiform pressure prior to development and if the volume output of all drilled wells should be controlled equitably then the pressure within the network outside the drainage areas of all wells should at any time be practically uniform with the rate of pressure decline depending on the rate of volume output.

The pressure gradient in any direction within a well's drainage area is fixed by the physical conditions retarding the movement of gas, oil and water to the particular well, and by the manner in which the well has been completed and is operated. But each well would become a separate operating unit under this plan with one exception, that is, a specified daily gas volume should not be exceeded. The operator of the well then would have an ample and protected opportunity to obtain as large a percentage of the oil within his well's drainage area as he could extract, competing only with the underground physical conditions retarding the movement of oil within the particular area in which he chose to drill a well and not competing with neighboring owners in disregarding underground physical conditions and wasting natural energy because of the insecurity of their potential property. The operator would be handicapped or benefited under this plan, however, in the operation of the well he chose to drill by being compelled to limit the gas volume from his well to that which would benefit the most wells in the pool.

The back pressure imposed on one well to restrict its gas volume would not be the same as on other wells in the pool, because of different operating gas-oil ratios and methods of choking. The back pressure might be imposed by a choke at the well head or by tubing or other means, but the operator should be able to lift the oil which enters his well to the surface, as in general it is not difficult to force a well to flow its oil production when high bottom hole pressures are maintained because the height to which the oil must be lifted tends to be decreased and the energy per cubic foot of gas increases with increased bottom hole pressure. It is apparent that the energy contained in the gas as it passes through a choke would be wasted in so far as its release from the well is concerned, but this wastage of energy is necessary if the well is properly choked in order to maintain a maximum effective reservoir pressure which fixes the degree of utilization for compressed gas dissolved in or associated with the oil and which also tends to control irregular water encroachment.

Maximum Gas-Oil Ratio Dependent Upon Legal Status

The question as to whether a maximum allowable gas-oil ratio should be included in this plan depends upon the legal status of the right to free gas energy. As an illustration, such an extreme case as the following might be considered; should wells producing only gas from a stratum from which other wells produce oil be allowed the same gas allotment as oil wells? If the gas wells were shut in, the free gas would migrate to the oil wells when the pressure was reduced in the oil area. Closing in the gas wells would tend to maintain the pressure in the reservoir just as the effect of water encroachment does. In addition, the expanding free gas would cause some oil to be propelled toward the oil wells and where it could gain access to certain wells its remaining energy could be utilized to lift the oil to the surface. From the viewpoint of maximum oil recovery from a pool it appears the gas wells should be shut in. But the owner of the gas lease would suffer drainage as a consequence. The owner of the oil lease would be primarily interested in the energy of the free gas while the owner of the gas lease generally obtains his revenue from the fuel value of the gas. In some cases he uses the energy in the free gas to force the commodity into the pipe lines, but the energy for this purpose can be duplicated on the surface for a few cents per thousand cubic feet of gas. Perhaps the answer would be to prorate the gas sales from a pool on the basis of the quantity of gas each owner's acreage would contribute to the total gas sales. But the nonproducing gas acreage should be allowed a liberal percentage of the gas revenue and the cost of compressing the gas to line pressure should be charged to the owners of oil acreage who would share in gas revenue. In this manner, the gas owner would obtain revenue from gas for its fuel value and the oil operator would utilize its natural energy but would reimburse him for the energy by compressing the gas to line pressure.

High Ratio and Migration

This answers the question where the gas-oil ratio would be 100 per cent, but what of the operator who would have a high gas-oil ratio but could produce some oil if he were allowed to operate his wells? The same argument applies to the gas migration as in the case of a gas well, but what of the oil which could be produced from the high gas-oil ratio wells? It probably would not migrate to the other wells and would therefore remain underground, but other operators would recover a larger percentage of oil from their properties because of the gas energy conserved in not operating the high gas-oil ratio wells. In the absence of any legal determination concerning the right to gas energy perhaps the best solution to this problem in so far as this plan is concerned is to abandon the idea of projecting a maximum gas-oil ratio into it and to compromise by allowing high gas-oil ratio wells and perhaps even gas wells the same gas allowance as oil wells thereby materially arresting pressure decline in the entire pool. And the drilling of so many energy wasting wells would decrease if it were known that they could not be "blown onto oil" at the expense of the ultimate oil recovery from the entire pool and of the wastage of gas.

Attention should be called to the fact that this plan does not limit the percentage or amount of oil an owner could extract from his property, except in so far as the gas energy allowance from his property would be controlled. He would be at liberty to employ any legitimate methods of development and operation he might elect in order to utilize his gas energy allowance in producing the oil from his wells and he would not jeopardize the interests of others or be jeopardized by his neighbors' methods of development and operation. There would naturally be an incentive to operate in an efficient manner, employing the best methods and equipment available and the inevitable result would be that better and more efficient methods and equipment would be developed.

Advantages of Plan

The chief advantage to be secured under this plan would be the increase in the ultimate oil recovery from a pool. It is almost certain that the percentage of oil recovery in general could be vastly increased, possibly up to 100 per cent of what is now recovered by known methods of development and operating, and probably more than 100 per cent by methods which would result under a controlled system of operations.

One might wonder what could be done with this increased oil production in times like the present. However, it should be understood that the oil production from flush pools would be distributed over a period of a few years rather than a few months and the stabilizing effect therefore would be pronounced. The plan would not eliminate overproduction, only decreased drilling of oil wells can accomplish that, but it would tend to eliminate periodical peaks in oil production by drastically restricting the flush production from new pools. If overproduction were to become an actuality under this plan, proration of oil could be equitably accomplished by the simple expedient of decreasing the gas allowance per acre to whatever extent needed to limit the oil production to the market outlet.

Obviously, the plan would force a steady gas production over a sustained period of time and this would permit an economical utilization of the gas accompanying the oil. Natural gasoline plants could economically strip more of the gas of its gasoline content and gas companies would often be warranted in constructing their transportation lines into the field in order to transmit the gas to points where it could be utilized as fuel. The major portion of the gas with some of its gasoline content is wasted from a pool into the air at the present time because the bulk of it is produced within a period of a few weeks or months and it is uneconomical to provide the enormous facilities required to manufacture the gasoline and to transport the gas during the period of peak gas production.

Major Benefit

Increasing the percentage of oil production from a pool by this plan would decrease the initial rate of return on the expenditure necessary for exploitation and the expenditures in excess of income would necessitate an increased allowance for interest on investment. However, there would be several economical advantages which would more than offset these interest charges to the ultimate end of increasing the profits accruing to the producers. The major benefit would be the income derived from the additional oil recovered. Also, overhead expense should not increase, therefore if the ultimate production would be doubled that expense per barrel should be reduced one-half. And the lifting cost per barrel on the total oil produced should be less because of the better utilization of energy for operating purposes. The profit from natural gasoline manufacture should increase because of the additional gas processed per dollar of plant investment. The income from gas sales should be increased appreciably and oil could be equitably stored in its natural reservoir, thereby releasing the "frozen assets" necessary for surface storage. Certainly, these advantages would increase the operating profit per dollar invested under this plan of controlled operations.

Perhaps the greatest underlying advantage of a plan of this type would be the removal of the cause for immediate production of oil—namely, insecurity of potential oil and gas property, and if this can be done a great many ills of the producing division of the oil industry can be cured and considerably less oil left underground and more gas utilized. This plan would allow abandonment of the present competitive system of operations which disregards the physical nature of petroleum deposits and would permit in its place a co-operative system, thereby allowing each owner an opportunity to take that fair proportion of the oil underlying his property which he could recover without infringing upon the rights of other owners in the common pool to do likewise.

UNION'S CUT IN PRICE IS MET BY STANDARD

(Continued from Page 21)

not be able to dispose of current production in the face of the limited demand for light refining crude.

Overproduction Blamed

The collapse of the price structure of both crude and refined oils on the Pacific Coast can be attributed primarily to overproduction and secondarily to the inability of operators to reduce crude oil production to actual market requirements. Only for a period of a few days has crude oil production in California been reduced to the allowable established by an economic survey on several occasions. Compulsory regulation has also failed to reduce state production owing to litigation which prevented application of the gas conservation law.

Leaders of the industry on the Pacific Coast have not yet given up the attempt to effect compulsory regulation through legislative enactment as there is a bill pending in the state legislature to reduce state production to current requirements under supervision of state officials. The California Supreme Court recently upheld the legality of the gas conservation law for the second time when it failed to find any merit in an appeal taken by the Twin Bell Oil Syndicate and the Star Petroleum Co. The court said: "We reiterate that the legislation in question has lawfully vested in the Superior Court the power to determine what wastage of gas is reasonable or unreasonable. An estimate shows that only 20 per cent of natural gas released at Santa Fe Springs was beneficially used. It therefore appears that the very thing the State was endeavoring to prevent has been frustrated by unregulated operation or by operations conducted in spite of attempted regulations so that further recovery must depend on artificial gas repressuring or pumps."

FLAME TRAVEL PICTURE SHOWN AT CHEMIST MEET

(Continued from Page 26)

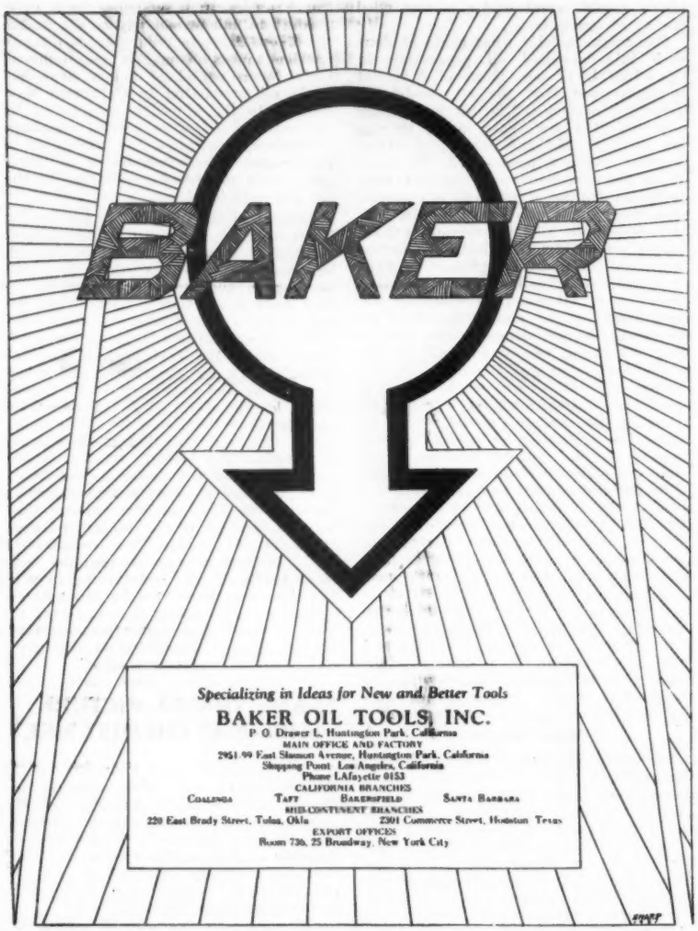
the spark plug and passes through the charge. It was found that the combustion zone moved more rapidly through the middle portions of the combustion chamber than along the side walls. This peculiarity of the flame travel is probably due to the cooling effect of the walls of the combustion chamber.

"In regard to the way in which inflammation takes place at the time of detonation there seem to be three possibilities. First, at the beginning of detonation spontaneous ignition may occur at a point or at a number of points in advance of the normal combustion zone. This flame then spreads rapidly through the remaining unburned portions of the charge. Second, all of the unburned charge visible through the window may all burst into flame simultaneously at the beginning of detonation, instead of at one or at several points in advance of the normal combustion zone. Third, the velocity of propagation of the normal combustion zone may increase sharply or to substantial infinity as it passes through the last part of the charge to burn.

"No attempts have been made to relate the rate of pressure rise to the volume of gas burned per unit time. The reason for this is the lack of information about the transverse shape of the flame front in this combustion chamber and about the directional velocities of the gases in the combustion chamber with respect to the flame front. For a similar reason calculations of the volumes of the charge remaining to be burned at the time the knock begins and calculations of the increases in pressure caused by the knock are not included in this paper. On all of the flame records the intensity of the light in the products of combustion increases sharply at the time that the pressure begins to rise rapidly in the combustion chamber. At this time the burned gases between the spark plug and the combustion zone begin to emit light. A most significant fact about the afterglow is that the intensity of the light is at a maximum in those portions of the products of combustion which were formed before the pressure began to rise rapidly in the combustion chamber."

Synthetic Lub Oils

The relationship existing between the physical properties and the chemical properties of lubricating oils was explained in a paper by F. W. Sulivan, A. W. Neeley, V. Voorhees and R. V. Shankland of the Standard Oil Co. of Indiana and point to the possibility of further im-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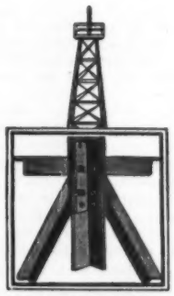

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proving the quality of lubricants on the basis of their chemical composition.

Cracked distillates were taken as the raw material for the polymerization studies and approximately 2 per cent by weight of aluminum chloride was used as the catalyst. The reactions were carried out at temperatures close to 200° F.

Crystallization of Wax

Allied with the discussion of the manufacture of lubricating oils is the subject of wax removal from the base oil and considerable additional information was presented by S. W. Ferris, H. W. Cowles, Jr., and L. M. Henderson of the Atlantic Refining Co. regarding the nature of the wax crystals. In the studies made the authors used slack wax from Mid-Continent crude as the base material. This was freed from oil by four successive recrystallizations from ethylene dichloride at —12 to —14° C. The oil free wax was then fractionally distilled at 1 to 3 mm. absolute pressure.

An X-ray diffraction study of fractionated paraffin waxes was then summarized in a paper presented by G. L. Clark and H. M. Smith of the University of Illinois. Photographic studies was made and by a unique method of photography it was possible to show the length of the wax molecules.

FEW CHANGES IN REFINERY MARKETS

(Continued from Page 20)

lowering refinery prices over the past few months.

Another favorable development of the week was the announcement by three major companies that they would reduce their imports of crude oil or refined products or both. This will increase the demand temporarily at least from refineries in this country and aid in improving both the crude oil and gasoline markets.

Gasoline and Naphtha

Most Oklahoma refiners are quoting U. S. Motor gasoline at a price range of 3½ to 4 cents. Some sales were made the last few days of March by a few refiners as low as 3¼ cents. Some of this material was for delivery over April. Buying was slow on Monday and Tuesday and brought a feeling of uncertainty in the trade as to the probable April market. Several refiners have excess material to move during April and this will be made available at the going market within a few days.

The bargain material in gasolines was in the high gravity grades rather than U. S. Motor gasoline. Several refiners with 400, 390 or 375 endpoint grades on hand did not hesitate to shade prices when offered orders for immediate delivery. The domestic demand for these grades was slow with no export purchases reported. It is apparent that the high gravity market in Oklahoma and the Mid-Continent generally will be unsatisfactory until the export situation improves.

The high gravity grades are being sold at Gulf Coast points at practically the same prices as are now being asked in the Mid-Continent. The major factors in the export market have plenty of material on hand at their own refineries or at terminals and there has been no disposition to advance prices to the point where Mid-Continent refiners might share in the business. The same situation applies to kerosene and to a lesser extent, all other refined products.

With a normal export movement at this time, it is certain that the Mid-Continent market would never have dropped to its present levels. Although those in touch with conditions have consistently pointed out that the Mid-Continent cannot expect the usual export outlets this year, it is reasonable to assume that foreign prices will advance with improved conditions in the industry and in the rearrangement of markets the Mid-Continent refiners will gain in the domestic market part of what they lose in the export market.

The demand for naphthas is fairly active and prices are steady. The special naphtha market, including cleaners' naphthas, solvents and painters naphthas is suffering from excessive competition and prices are constantly being lowered.

Kerosene

The tank wagon demand for kerosene has improved according to reports from several refiners who have stations in the Middle Western states, due to a greater consumption on the part of farmers with tractors, etc. This consumption will continue heavy through April.

Refinery prices in Oklahoma and other Mid-Continent areas are unchanged. The 41-43 water white grade was quoted at a low of 2⅝ cents. The higher gravities are not bringing their accustomed premium prices from several refiners selling gravities as high as 44 as low as 2¾ cents.

Fuels

With a slow demand practically all fuels from the prime white distillates to the lowest gravity residuum grades are lower in price. The greatest weakness is the high gravity fuel oils and the gas oils and distillate grades. The fuel demand for these products is at the low point of the year.

Due to the low prices for crude oil there has not been the usual demand for cracking stock. In the past when the fuel demand slowed up, refiners with large cracking facilities usually came into the market and bought the straightrun gas oils or high gravity fuel oils. Most refiners, however, take the position that the gas oil cracking stocks should not cost any more than crude oil laid down at the refineries. For an intrastate shipment in Oklahoma, this means a price of not more than 1¼ cents for cracking stock to which is added the transportation from one refinery to another. This situation probably means a continuance of low prices for all fuels until such time as there is an improvement in the industrial demand or the crude oil situation improves.

Some of the railroads in Oklahoma and other states are buying the low priced fuel oil available on the spot market. Most of these railroads have contracts with refiners on which they are paying 50 cents or more a barrel. By keeping their contract purchases at a minimum they are able to buy additional supplies on the spot market. There has also been some local industrial and public utility buying in Oklahoma.

Distress sales of high cold test fuels as low as 30 cents have been reported in Oklahoma the past week. The usual price range starts at 37½ cents for the gravities under 18. Prices range up to 65 cents for the highest gravity low cold test grades.

The U.G.I. and industrial grades of gas oil sold at a low of 1½ cents with lower prices quoted in competitve areas. The low cold test and low flash gas oils used as furnace oil are moving slowly and sales as low as 2 cents are reported. The same price situation is found in the higher gravity distillates.

Lubricants and Wax

One of the largest manufacturers of all grades of lubricants refined from Mid-Continent crude oils announced a new schedule the past week to the jobbing trade. Most of the price changes were to meet reductions already made by other manufacturers.

This company and some of the other manufacturers report an increased spring movement to jobbers and compounders. Steam refined stocks continue extremely weak. Wax prices are unchanged with little new trading.

CONSTRUCTING SMALL REFINERY

A. H. Krueger, of Natonia, Kans., is building a small skimming plant in Section 11-19-16w, in the Rooks County (Kansas) Field. There are two producing wells near the new refinery site.

J. B. HENDERSON DEAD

J. B. Henderson, head of the Henderson Producing Co., of Billings, Mont., died in a hospital in that city, following an attack of peritonitis. Mr. Henderson was a native of Nova Scotia. He was 59 years old.

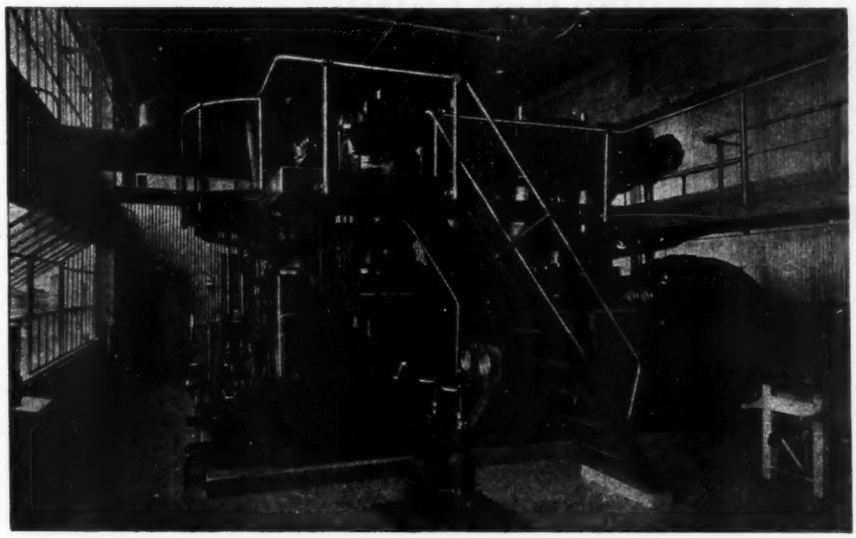
60 McINTOSH & SEYMOUR ENGINES totaling 29,255 hp. bought during 14 years by one customer alone!

That is the record of purchases by The Prairie Pipe Line Company between June, 1916, and Sept., 1930, for its pumping stations.

DIESEL engines get no severer test than in pipe line pumping service, where they are called upon to carry heavy load 24 hours per day for weeks or even months without shutdown, and must then be ready for the next run on short notice. Interruptions are not permissible as power weakness at one station slows down the whole line, yet — little reserve capacity can be installed, as the cumulative cost of spare prime movers for all stations would be excessive. Sustained high economy also is compulsory, as slight deterioration at each engine would make a big difference in the total annual fuel costs. To add to these rigid restrictions, the prime movers are usually compelled to burn the cheapest of fuels, must often be located in dusty surroundings or where the water supply is scant or impure, and are sometimes moved from one station to another when new fields are opened or when production and demand change.

McIntosh & Seymour Engines
bought by
The Prairie Pipe Line Co.
1916 to 1930 inclusive

Date	No. of units	Total horsepower
1916		
June	3	1285
October	1	500
1917		
April	2	570
May	2	785
November	2	1330
1918		
July	1	500
September	3	1500
October	4	2660
1919		
August	3	1200
November	2	1330
1920		
March	5	2665
1921		
August	1	600
September	1	665
December	6	2400
1922		
March	1	400
September	1	600
1925		
March	1	75
1926		
August	2	800
1927		
May	3	2400
1929		
January	7	5000
March	6	1000
May	1	80
November	1	110
1930		
September	1	800
Total	60	29255



The superior economies and dependability of McIntosh & Seymour Engines are generally conceded in the oil pipe line industry. They are convincingly indicated in the case of The Prairie Pipe Line Company by almost continuous repeat installations throughout a 14-year period, and after the long-time satisfaction of many older units was a matter of record.

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CALIFORNIA OIL FIELD OPERATIONS FOR FEBRUARY, 1931

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for February amounted to 14,930,932 bbls., an average of 533,248 bbls. per day. This is an increase of 1,450 bbls. per day over January production.

Total stocks of crude and all products in Pacific Coast territory decreased during the month 1,094,474 bbls. The total stocks at the end of the month were 178,939,838 bbls. The total stock decrease for 1931, up to February 28, was 2,093,303 bbls.

Thirty-four wells were completed during the month with an initial daily production of 19,146 bbls., compared with 39 wells completed during January with an initial production of 39,346 bbls.

PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

	Barrels per month	Daily average Feb., 1931	Daily average Jan., 1931	Daily average Feb., 1930
Group No. 1:				
Coalinga	245,334	8,762	8,889	9,580
Elk Hills	410,610	14,665	14,808	17,095
Fruitvale	59,019	2,108	2,071	2,779
Kern River	311,916	11,140	10,823	19,565
Kettleman Hills	751,974	26,856	22,293	13,167
Lost Hills-Belridge	182,400	6,514	6,469	5,132
McKittrick	104,741	3,741	3,706	4,725
Midway-Sunset	1,492,641	53,309	53,251	75,784
Mount Poso	210,303	7,511	7,600	13,510
Round Mountain	6,388	228	328	2,949
Wheeler Ridge	15,001	536	556	636
Group No. 2:				
Capitan	19,078	681	1,016	125
Elwood	871,074	31,110	32,969	42,477
Rincon	60,966	2,177	2,352	3,108
Santa Barbara	9,800	350	231	4
Santa Maria	72,709	2,597	2,508	3,418
Summerland	4,713	168	264	345
Ventura Avenue	1,251,396	44,694	43,469	55,001
Ventura-Newhall	108,787	3,885	4,152	5,271
Watsonville	1,750	62	62	63
Group No. 3:				
Coyote	292,387	10,442	9,849	11,949
Dominguez	330,788	11,814	9,893	11,054
Fullerton (Brea Olinda)	291,681	10,417	10,634	13,404
Huntington Beach	601,953	21,498	22,802	41,001
Inglewood	428,453	15,302	15,448	21,915
Lawndale	8,479	303	333	565
Long Beach	2,657,598	94,914	92,816	113,813
Los Angeles-Salt Lake	40,312	1,440	1,414	1,587
Montebello	198,421	7,087	6,955	8,603
Newport	1,120	40	40	40
Playa Del Rey	914,431	32,658	35,589	.....
Potrero	24,191	864	1,086	711
Richfield	196,123	7,004	6,320	14,610
Rosecrans	134,485	4,803	4,533	6,309
Santa Fe Springs	1,995,081	71,253	71,694	179,209
Seal Beach	418,388	14,943	16,828	31,104
Torrance	168,269	6,009	5,869	12,354
Whittier	38,171	1,363	1,388	1,459
Total	14,930,932	533,248	531,798	745,916
January	16,485,738	531,798	.....	.....
Increase	*1,554,806	1,450	.....	.....

*Decrease.

STOCKS

	Feb. 28, 1931	Jan. 31, 1931	Feb. stock decreases	Feb., 28, 1930
Heavy crude, heavier than 20° A.P.I., including all grades fuel	106,524,024	107,742,194	1,218,170	113,687,953
Refinable crude, 20° A..P.I. and lighter	42,650,026	42,468,218	*181,808	44,341,155
Gasoline	17,685,477	17,692,377	6,900	18,747,359
Naphtha distillates	3,378,904	3,314,982	*63,922	2,494,887
All other stocks	8,701,407	8,816,541	115,134	10,427,369
Total all stocks	178,939,838	180,034,312	1,094,474	189,698,723

*Increase.

DEVELOPMENT

	New rigs up	Active drilling	Completed	Daily initial output	Active producing	Aband'n'd wells Drillers	Aband'n'd wells Producers
Group No. 1:							
Buttonwillow gas field	0	1	0	0	0	0	0
Coalinga	0	0	0	0	715	0	0
Elk Hills	0	0	0	0	208	0	1
Fruitvale	0	0	0	0	17	0	0
Kern River	1	2	0	0	883	0	0
Kettleman Hills	0	18	0	0	8	0	0
Lost Hills-Belridge	2	12	0	0	156	2	1
McKittrick	0	0	0	0	226	0	1
Midway-Sunset	0	5	1	70	1,767	0	0
Mount Poso	2	1	0	0	68	0	0
Round Mountain	1	1	0	0	1	0	0
Wheeler Ridge	0	0	0	0	34	0	0
Group No. 2:							
Capitan	0	1	0	0	5	0	0
Elwood	1	1	0	0	53	0	0
Rincon	0	3	0	0	33	0	0
Santa Barbara	0	1	0	0	3	1	1
Santa Maria	1	2	0	0	171	1	0
Summerland	0	0	0	0	97	1	0
Ventura Avenue	1	16	5	6,990	152	0	0
Ventura-Newhall	2	7	0	0	424	4	0
Watsonville	0	0	0	0	6	0	0
Group No. 3:							
Coyote	3	3	0	0	181	0	0
Dominguez	0	1	1	3,500	64	1	0
Fullerton	0	1	0	0	367	0	0
Huntington Beach	1	3	0	0	373	0	0
Inglewood	0	1	1	390	212	0	0
Lawndale	0	0	0	0	8	0	0
Long Beach	5	30	10	4,066	915	4	0
Los Angeles-Salt Lake	0	0	0	0	260	0	0
Montebello	0	0	0	0	164	0	0
Newport	0	1	0	0	4	0	0
Playa Del Rey	8	25	15	4,080	171	0	0
Potrero	1	1	0	0	19	1	0
Richfield	0	0	0	0	172	0	0
Rosecrans	2	2	1	50	99	0	0
Santa Fe Springs	1	1	0	0	464	1	1
Seal Beach	0	2	0	0	123	0	1
Torrance	0	0	0	0	513	0	0
Whittier	0	0	0	0	159	0	0
Miscellaneous drilling	12	152	0	0	0	12	0
February	44	294	34	19,146	9,295	28	8
January	28	325	39	39,346	9,487	13	11
Decrease	*16	31	5	20,200	92	*15	3
Average for year 1930	80	424	63	48,710	9,632	21	3
Average for year 1929	109	610	76	100,625	10,550	26	18
Average for year 1928	107	520	59	56,802	10,823	15	26
Average for year 1927	97	404	75	39,992	11,276	23	21
Average for year 1926	95	422	76	32,635	11,288	24	1

*Increase.

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Six Year Record of Major Oil Fields

Improved Geology, Deeper-Sand Discoveries and Modern Engineering Methods Stand Out in Production Figures

By James McIntyre

The accompanying table showing the production in each year from 1925 to 1930 both inclusive, of all the fields in the United States that have reached the major class in any one or more of the six years is of value for reference purposes.

There was a time in the 70 years' history of the oil business when a field that had reached a peak of production was expected to permanently decline—at first swiftly, and then more slowly, until it had reached its economic limit. Those were the days when less was known by the producer, the engineer and the geologist than is known today. It was in the days of one-sand fields—or supposedly one-sand fields. It was before the producer, prodded on by the geologist began to drill deeper and find new producing levels, and then by the application of modern petroleum engineering methods proceeded to keep his wells alive for a longer period and to recover more barrels of oil per acre foot than was thought possible.

In the accompanying table which shows all the fields in the United States that have reached an average of 10,000 bbls. per day for one or more years since 1925 inclusive, there are many contrasts.

The table gives the annual production of the fields in each of the six years. It shows Burbank, Oklahoma, a known one-sand field, steadily falling year by year. On the other hand, it shows Spindletop, Texas, which was opened in 1901, and soon afterward reached its peak, in such a declining condition in 1925 that its total output for the year reached only 420,893 bbls., or an average of about 1,100 bbls. per day, jumping to 14,838,218 in 1926 and to 21,264,935 bbls. in 1927, because the Yount Lee Oil Co. tested out the deep horizons and, together with other companies in the field, found oil at various lower levels.

Water Pressure

The table shows the remarkable Bradford-Allegany Field, in Pennsylvania and New York, opened on the Pennsylvania side in 1875 and in Allegany County, New York, about six years later, producing 5,812,625 bbls. in 1925, and 12,249,065 bbls. in 1930 (and under curtailment in 8 of the 12 months last year), the result of intensive re-drilling and flooding the Bradford and Richburg sands with water under high pressure. Had it not been for the necessity of curtailment the field could easily have produced 16,000,000 bbls. from the same wells that produced only 12,000,000 bbls., and all by applying scientific engineering methods to a tight, finely-grained sand peculiarly suited to flooding.

Deeper Drilling

Santa Fe Springs, California, is one of several fields in that State where deeper drilling revived a declining field which produced less than 19,000,000 bbls. in 1925, but poured out over 76,000,000 bbls. four years later, only to be held back in 1930 by the action of the producers who saw the wisdom of keeping unnecessary production in the ground. Long Beach, California, presents a similar picture. The ancient Humble Field and the less aged Pierce Junction Pool in the Gulf Coastal Texas show increased production from deeper drilling.

Wortham, Texas, is pictured as a horrible example of over drilling and too rapid development. It was opened in November, 1924, made 16,000,000 bbls. in 1925, and less than 2,900,000 bbls. the next year and a scant 276,468 bbls. in 1930.

Allen, Oklahoma, was an old shallow field in which deep sand production was found in 1927 bringing the production up to nearly 9,000,000 bbls. for the year 1929.

The Healdton Pool in Oklahoma is shown as a most consistent producer year after year. Its decline has been gradual since its flush days and after 18 years it remains among the major fields. The Cushing-Shamrock Field is another very much like it but it is slumping faster than Healdton.

The Eldorado-Augusta Field, which for the purpose of this table, includes every pool in Butler County, Kansas, shows an increase in 1930 over its production of

VARIATION IN PRODUCTION IN THE MAJOR FIELDS

Showing Annual Crude Oil Output From 1925 to 1930, Both Inclusive

Pool—	Production in 1925	Production in 1926	Production in 1927	Production in 1928	Production in 1929	Production in 1930
Santa Fe Springs, California	18,969,528	17,446,709	15,153,578	16,093,931	76,477,464	44,251,396
Elwood-Goleta, California	.....	.....	86,840	895,152	9,435,819	14,606,307
Ventura Avenue, California	6,699,403	14,795,495	17,808,704	18,920,942	20,934,388	17,493,155
Seal Beach, California	.....	587,107	16,424,929	12,436,371	14,418,305	8,026,796
Kern River, California	5,901,855	4,358,396	6,098,582	5,071,284	6,089,344	5,349,915
Midway-Sunset, California	36,923,402	33,968,755	31,670,708	27,314,093	25,310,976	23,487,147
Elk Hills, California	11,971,149	12,292,754	10,073,073	8,107,198	6,353,035	6,572,379
Coalinga, California	7,751,107	7,295,807	7,154,599	4,655,284	3,558,843	3,373,078
Fullerton, California	4,481,443	6,987,489	7,008,934	5,743,044	4,813,942	4,423,266
Coyote, California	7,140,004	6,030,619	5,146,864	4,901,988	4,176,035	3,890,047
Montebello, California	6,843,194	6,515,493	5,498,252	4,369,638	3,657,922	2,712,725
Richfield, California	4,318,488	5,574,244	7,884,042	6,798,673	5,776,258	3,643,578
Huntington Beach, California	15,887,474	19,064,814	26,344,697	19,642,278	16,007,030	11,106,203
Long Beach, California	40,173,375	37,931,964	34,541,667	62,467,103	60,495,555	36,599,688
Torrance, California	13,242,817	10,354,905	8,338,938	6,454,067	5,000,218	4,116,846
Inglewood, California	18,348,396	17,390,131	12,571,556	10,762,797	8,768,101	6,429,205
Dominguez, California	13,328,817	7,801,586	5,887,645	4,267,009	3,606,850	3,694,075
Playa Del Rey, California	.....	.....	.....	.....	25,121	4,719,981
Kettleman Hills, California	.....	.....	.....	199,699	1,951,786	6,209,357
Mount Poso, California	.....	.....	40,277	53,977	1,826,056	3,883,924
Rosecrans, California	7,263,466	6,114,430	3,506,116	2,392,325	2,463,808	2,435,341
Pecos County, Texas	.....	.....	5,250,173	22,673,875	41,733,955	42,603,498
Joe Bruner, Texas	.....	.....	.....	178,430	13,556,048	7,387,359
Pampa, Texas	.....	.....	3,966,412	7,795,865	18,406,284	21,782,549
Chalk-Settles, Texas	.....	100,915	1,127,269	4,692,236	14,826,190	11,188,886
Barbers Hill, Texas	38,338	192,971	307,160	306,177	4,523,350	7,865,597
DeWalt, Texas	.....	.....	.....	391,244	4,016,401	4,291,689
Wilbarger County, Texas	3,314,523	5,116,448	4,462,768	8,124,626	10,411,183	7,867,089
Humble, Texas	1,729,740	1,679,449	1,523,844	1,263,983	2,996,409	5,864,035
Pierce Junction, Texas	327,815	1,041,723	3,163,585	3,983,484	5,193,061	4,056,270
Mirando, Texas	1,069,980	4,227,957	4,540,520	3,098,196	4,165,620	4,097,075
Shackelford County, Texas	1,049,283	2,712,610	3,038,704	3,639,368	4,145,166	2,319,132
Burkburnett, Texas	5,158,665	4,330,121	4,592,203	4,031,011	3,597,936	3,104,834
Electra, Texas	6,294,646	6,127,336	5,099,618	4,627,192	4,601,996	3,995,470
Archer County, Texas	13,254,247	11,875,426	9,648,832	7,374,445	6,592,594	6,023,760
Hutchinson County, Texas	382,340	23,101,806	32,240,493	13,839,632	9,709,746	7,285,486
Brown County, Texas	1,349,932	3,596,033	7,519,647	4,257,149	3,147,236	2,291,227
Big Lake, Texas	8,759,457	10,978,135	8,668,381	7,039,043	6,425,664	7,016,204
Hendricks, Texas	.....	6,431	3,109,523	58,893,863	49,826,190	25,925,581
Luling, Texas	9,371,992	7,809,771	6,099,264	5,097,808	4,246,861	3,476,058
Hull, Texas	7,296,687	7,242,551	5,914,333	4,115,268	3,488,869	3,161,436
West Columbia, Texas	4,183,636	3,366,892	3,459,220	2,928,949	2,441,432	1,915,990
Wortham, Texas	16,024,035	2,834,207	1,137,396	664,582	430,552	276,468
South Liberty, Texas	4,674,003	2,089,391	1,102,830	1,404,499	2,207,257	1,550,477
Spindletop, Texas	420,893	14,838,218	21,264,935	14,332,357	10,183,684	5,997,913
Powell, Texas	17,218,874	10,379,485	6,249,034	4,059,389	2,884,177	2,077,524
Young County, Texas	.....	2,900,081	3,473,329	2,987,054	2,481,445	5,229,401
Van, Texas	.....	.....	.....	.....	122,139	7,530,222
Refugio, Texas	.....	.....	.....	25,312	2,063,475	11,698,202
Darst Creek, Texas	.....	.....	.....	.....	228,876	11,343,682
Upton-Crane, Texas	.....	2,218,242	29,583,131	25,261,260	17,195,992	14,152,389
Mexia, Texas	6,730,323	4,826,454	4,127,388	2,552,468	1,939,317	1,510,993
St. Louis-Pearson-Maud, Okla.	10,400	10,677	1,406,020	21,878,954	36,718,245	13,194,525
Oklahoma City, Oklahoma	.....	.....	.....	110,496	8,709,727	34,603,067
Little River, Oklahoma	.....	.....	5,144,014	24,447,158	28,909,396	17,348,145
Marshall-Lovell, Oklahoma	.....	.....	436,213	2,692,520	5,759,444	2,196,202
Allen, Oklahoma	93,124	174,049	593,420	6,958,689	8,971,530	6,579,898
Seminole City, Oklahoma	.....	10,838,823	47,039,644	18,237,004	11,291,330	6,562,504
Earlsboro, Oklahoma	.....	388,460	36,885,196	33,321,824	25,602,005	23,398,033
Bowlegs, Oklahoma	.....	.....	36,649,733	23,800,896	12,122,250	6,509,450
Searight, Oklahoma	.....	.....	10,232,511	5,218,241	3,867,349	3,107,065
Sholem-Alechem, Oklahoma	634,331	2,011,408	5,255,516	5,328,386	4,829,057	4,852,825
Burbank, Oklahoma	19,954,667	16,352,805	15,266,099	13,060,449	7,435,589	5,717,088
Tonkawa, Oklahoma	22,721,580	13,867,121	7,747,121	4,878,203	3,518,176	2,432,084
Bristow, Oklahoma	9,547,666	9,080,207	7,585,670	5,624,601	5,295,920	4,678,137
Cushing-Shamrock, Oklahoma	8,024,551	7,621,495	6,942,017	6,521,413	5,988,122	4,980,031
Cromwell, Oklahoma	11,673,369	6,193,396	4,521,063	3,386,553	2,867,933	2,604,682
Healdton, Oklahoma	5,575,981	5,501,310	5,447,776	5,068,978	4,599,309	4,208,631
Konawa, Oklahoma	.....	.....	.....	.....	.....	5,099,516
Garber, Oklahoma	7,484,428	11,207,851	5,292,726	2,943,248	1,973,902	1,639,045
Wewoka, Oklahoma	4,483,843	9,573,687	5,899,957	2,415,180	2,409,118	1,428,714
Braman, Oklahoma	2,933,564	5,578,860	3,858,073	1,611,121	1,356,608	1,115,281
Davenport, Oklahoma	3,131,158	4,309,769	1,224,921	764,121	628,859	443,493
Hewitt, Oklahoma	5,324,672	4,200,975	3,539,005	3,338,421	2,952,560	2,501,412
Graham-Fox, Oklahoma	4,442,526	4,114,264	3,307,351	2,563,882	1,991,753	1,625,203
Mounds-Beggs, Oklahoma	4,026,207	3,877,786	2,995,880	2,509,747	2,029,634	1,315,367
Papoose, Oklahoma	7,802,531	3,632,801	2,467,950	1,546,151	1,204,529	982,387
Sedgwick County, Kansas	.....	.....	.....	378,851	8,899,688	7,719,802
Rainbow Bend, Kansas	3,949,396	1,405,225	802,672	471,840	439,251	581,240
Eldorado-Augusta, Kansas	8,867,807	9,634,084	10,517,922	9,690,889	9,272,141	9,099,075
Greenwood County, Kansas	13,464,805	17,074,977	12,664,125	9,872,560	7,920,990	7,265,892
Sumner County, Kansas	3,436	1,248,088	6,708,275	7,787,738	4,566,556	3,224,852
McPherson County, Kansas	.....	.....	.....	.....	.....	5,604,670
Homer, Louisiana	4,815,883	2,071,498	1,813,900	1,576,940	1,418,424	1,268,578
Caddo, Louisiana	4,178,839	4,620,130	6,047,857	4,888,365	4,652,047	4,379,614
Haynesville, Louisiana	4,815,883	3,579,359	2,754,300	2,222,804	1,802,721	1,746,089
Urania, Louisiana	9,610	4,130,917	3,621,650	2,656,050	2,120,465	1,905,492
Smackover, Arkansas	74,075,613	52,155,308	35,507,476	24,775,769	19,666,126	18,755,335
El Dorado-Champagnolle, Ark.	3,220,435	2,712,610	2,188,033	5,617,219	4,485,371	2,986,026
Salt Creek, Wyoming	21,680,070	18,016,104	14,397,590	14,066,816	11,365,322	10,517,980
Lea County, New Mexico	.....	.....	.....	34,934	740,165	9,459,319
Sunburst, Montana	2,895,910	6,656,280	4,313,388	3,209,574	2,323,406	1,940,515
Bradford-Allegany, Pa.-N. Y.	5,812,625	6,206,000	7,314,500	8,418,000	11,274,000	12,249,065

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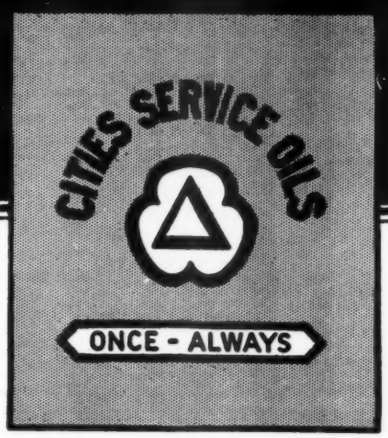

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Empire Oil & Refining Company

Subsidiary Cities Service Co.

GENERAL SALES OFFICES—TULSA, OKLA.

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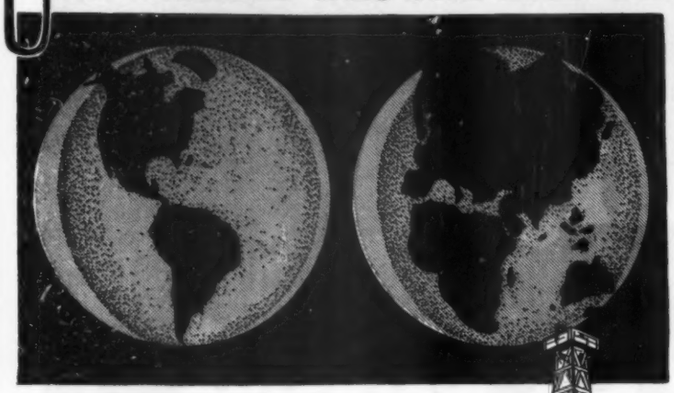
UNIVERSAL ACCEPTANCE

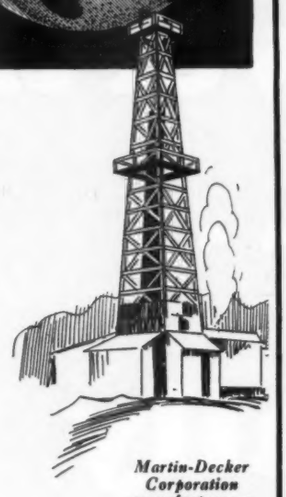


The Martin-Decker Weight Indicator was the first successful Weight Indicator for drilling wells.

That it was a complete success is evidenced by its

UNIVERSAL ACCEPTANCE

The first of a series of advertisements dealing with the universal acceptance of the Martin-Decker Automatic recording Weight Indicator. Wherever rotary drilling is being done you will find a great majority of operators using the dependable weight indicator.



Martin-Decker Corporation manufactures a complete line of instruments for weight recording, measurement and control. Write for descriptive literature.

THE WEIGHT INDICATOR
MARTIN DECKER CORP.
LONG BEACH CALIFORNIA

Mid-Continent Distributors
Reed Roller Bit Company
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Foreign Distributors for Weight Indicator
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Pittsburgh, Pa.

six years ago, but this was for the most part caused by persistent wildcatting and the opening of new pools and extensions to old ones.

The great Smackover Field in Arkansas was a three-sand field, one sand producing light oil and the two others heavy oil. It exhausted its "pay" possibilities in 1925, in which year it produced 74,000,000 bbls. and its decline has been steady and considerable from year to year since.

Curtailed Fields

In the group are a number of pools that have never been given an opportunity of displaying their potentiality as producers. These include the Kettleman Hills Field in California; Oklahoma City in Oklahoma; the Hobbs Pool in Lea County, New Mexico, the Van Pool in Van Zandt County, Texas, and the Yates Pool in Pecos County. Yates, Oklahoma City and Hobbs can produce a volume of oil more than equal to the total crude requirements of the United States for a considerable period. The production figures given in the table represent only a small part of what the three fields could have produced.

Twenty-five fields that had no existence in 1925 produced 308,931,399 bbls. of oil last year. Twenty of the 25 were yet unborn in 1926, 12 had no existence even in 1927, 5 had not yet figured in 1928, while 2 pools opened in 1930 reached the major class the same year. The 25 fields produced one-third of the total production of the United States in 1930, and the larger ones among them were under strict curtailment all year.

CANADA CUTS GASOLINE PRICE

Gasoline prices in the principal cities of western Ontario, and on the Island of Montreal, Toronto, are 2.5 cents lower following a general downward revision in the market throughout Canada. In Quebec and elsewhere in Ontario the markets are 1.5 cents lower, and in the maritime provinces the reduction is 0.5 cent. Kerosene prices were reduced 2 cents a gallon.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 34)

HARPER COUNTY

Empire's No. 1 Bruce, C NE SW Sec. 12-25-20w ..... T. D. 7,935 ft.; plugged back to 7,500 ft.; shot 20 qts. 7,270-7,300 ft.; plugged back to 5,568-82 ft.; shot 50 qts.; cleaning out.

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w ..... 20,000,000 ft. gas 5,350-5,400 ft.; total depth 8,539 ft.; shut down; sprayed 50 bbls. gasoline.

HASKELL COUNTY

Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19 .... Shut down 650 ft.
Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19 ..... Shut down 2,000 ft.
Ault et al's No. 1 Hall, SE NW Sec. 25-9-19 ..... Shut down 50 ft.
Holden's No. 1 Phillip, SE cor. Sec. 4-9-18e ..... Shut down 1,850 ft.
Marion Oil's No. 1 Sanders, NW NE NW Sec. 10-9-18e... Shut down 2,387 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-8-11 ..... Shut down 1,645 ft.

KAY COUNTY

Wilwright Gas Co.'s No. 1 Wildegrube, NE SW Sec. 14-27-1 ..... Fishing 3,850 ft.
Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 ..... Location.
Peters & Buckles' No. 1 Hayes, NW NE NW Sec. 24-28-3 ..... Fishing 3,200 ft.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2 ..... Drlg. 2,945 ft.
Blackwell Oil Gas Co.'s No. 1 Harshman, Sec. 2-26-1w... Rig on ground.
Boucher Oil Co.'s No. 1 Jefferson, NE SW Sec. 32-26-1w.. Drlg. 4,452 ft.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-18w ..... Rig.

LATIMER COUNTY

Choctaw Gas' No. 1 Weaver, C NE NW Sec. 4-6-18 ..... Drlg. 1,710 ft.
P. English's No. 1 Unknown, NW SE Sec. 16-6-19 ..... Shut down 300 ft.
LeFlore Oil Co.'s No. 1 McBee, NW cor. Sec. 3-7-21 ..... Shut down 3,601 ft.

LINCOLN COUNTY

Mote-Wheeler's No. 1 Stafford, NW NE Sec. 32-17-4 .... Drlg. 3,980 ft.; 6-in. csg.

LOGAN COUNTY

Eason Oil Co.'s No. 1 Young, C SW NE SW Sec. 34-17-4w.. Sand 4,919-42 ft.; made 870 bbls. 21 hrs. and 485 bbls. the second 24 hrs.; completed.

McINTOSH COUNTY

J. S. Routt's No. 1 Joseph, SW SE SE Sec. 10-11-15 ..... Completed 1,011-35 ft.; 4,000,000 ft. gas.
Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Fishing 5,687 ft.

MUSKOGEE COUNTY

I. T. I. O.'s No. 1 Unknown, C SW NE Sec. 23-11-21 .... Spudding.
Reboid's No. 1 Miller, SE NE NE Sec. 32-13-19 ..... Rig.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.

OKFUSKEE COUNTY

E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10 .. Shut down 3,690 ft.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage-Barber, NE cor. Sec. 23-11-3w ..... Shut down 1,200 ft.
L. C. Hivick's No. 1 Sunset Addition, NW SW NW Section 17-11-3w ..... Shut down 5,515 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE NW SE Sec. 17-12-4w ..... Shut down 6,700 ft.

PAWNEE COUNTY

Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5 ..... Shut down 1,950 ft.
Sperry et al's No. 1 Mullrap, SE SW Sec. 2-22-5 ..... Shut down 1,740 ft.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 .... Rig.

PITTSBURG COUNTY

Vincent et al's No. 1 U. S. Coal Land, NW SE Sec. 9-5-14 ..... Shut down 100 ft.
J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 ..... Rig.
C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 ..... Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

POTTAWATOMIE COUNTY

Droppleman et al's No. 1 Jones, SE NW Sec. 21-8-3 ..... Drlg. 1,400 ft.
J. E. Crosbie et al's No. 1 Brown, NE NW SW Sec. 2-9-4 ..... Wilcox 4,579-85 ft.; water; T. D. 4,593 ft.; abnd.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w ..... Drlg. 3,653 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Drlg. 2,956 ft.

SEMINOLE COUNTY

Sunray Oil Co.'s No. 1 Sunday, NW SE Sec. 35-5-5 ..... Location.

STEPHENS COUNTY

Ross Southard's No. 1 McKinney, NE cor. Sec. 25-1-8w... Shut down 1,062 ft.

WASHITA COUNTY

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w. Drlg. 1,600 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 ..... Shut down 100 ft.
Petroleum Holdings, Inc.'s No. 1 Musie, NW cor. Sec. 10-9-20w ..... Shut down 280 ft.

WOODWARD COUNTY

Prairie Oil & Gas Co. et al's No. 1 Wilbur, NE cor. NW Sec. 22-23-17w ..... Shut down 7,445 ft.

OKLAHOMA PANHANDLE

TEXAS COUNTY

Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-1S ..... Drlg. 4,585 ft.
Palo Alto Oil Co.'s No. 1 Graves, NE SW SW Sec. 23-2-1Se ..... Spudded; shut down.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Stewart-Howland's No. 1 Howard, NW SE NW Sec. 6-4s-11 ..... Shut down 10¢ ft.

Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 ..... Shut down 400 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10. T. D. 650 ft.
Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... Shut down 690 ft.
Johnson et al's No. 1 Usery, SE SW SE Sec. 14-16s-7e... Shut down 485 ft.

CARTER COUNTY

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 ..... Shut down 2,806 ft.

COTTON COUNTY

Gilbert-Lowery's No. 1 Harneg, C SE SE Sec. 4-2s-11w... Drlg. 2,101 ft.

JEFFERSON COUNTY

Smith's No. 1 McCarty, SE NW NE Sec. 18-4s-8w ..... Location.
C. V. Chenault et al's No. 1 Grogen, SW NE SE Sec. 15-7s-6w ..... Location.
Smith's No. 1 M. O. Carty, SE NW NE Sec. 18-4s-8w .... Rig.

LOVE COUNTY

Batson & Sterrette's No. 1 Dillard, SE NE NW Sec. 25-6s-3 ..... Show 5 bbls. 1,585-96 ft.; T. D. 4,-433 ft.; P. B. to 1,604 ft.
Hobbs et al's No. 1 Roberts, NE cor. SW Sec. 20-6s-3w... Shut down 3,130 ft.

MARSHALL COUNTY

McCrory et al's No. 1 Little, NW SW Sec. 36-7s-6 ..... Rig.
D. H. Curry's No. 1 Ward, NE SE SW Sec. 15-8s-6 ..... Drlg. 1,490 ft.
McCroy et al's No. 1 Adams, NE SW SE Sec. 31-7s-6 .... Comp. 532-40 ft.; 25 bbls.

STEPHENS COUNTY

Obermyer et al's No. 1 Skelton, NE SW SW Sec. 32-1S-7w ..... Shut down 1,375 ft.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 36)

HARPER COUNTY

Beeler et al's No. 1 Bear, C NE Sec. 21-36-6w ..... Shut down 1,830 ft.

HARVEY COUNTY

Empire-Shell's No. 1 Showalter, NW SE Sec. 23-23-2w ... Drlg. 2,500 ft.

KINGMAN COUNTY

Skelly Oil's No. 1 Miles, NE cor. Sec. 30-27-10w ..... 1,625-40 ft. 2,000,000 ft. gas; at 2,005-30 ft. 6,000,000 ft. gas; at 2,133-42 ft. 3,000,000 ft. gas; showing oil 2,385 ft.; T. D. 2,-441 ft.; S. D.; estimated at 600 bbls. a day.

LYONS COUNTY

Griffith et al's No. 1 King, NW cor. Sec. 8-19-10 ..... Shut down 910 ft.

MARION COUNTY

Midwell's No. 1 La Master, NW cor. Sec. 31-22-4 ..... Shut down 650 ft.

McPHERSON COUNTY

Henderson & Holden's No. 1 Sommerfield, NE NW Sec. 23-19-1w ..... Drlg. 2,954 ft.; showing 25 bbls. of oil and 50 bbls. of water a day; T. D. 3,227 ft.; shut down.

MORTON COUNTY

Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 22-34-43w ..... Fishing 5-in. csg. 3,460 ft.

MORRIS COUNTY

Urschel et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7... Machine.
Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9... Shut down 900 ft.

NESS COUNTY

Gypsy Oil Co.'s No. 1 Coleman, C SW NE Sec. 25-17-25w.. Cleaning out 4,160 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w ..... Rig.

OSAGE COUNTY

Briggs & Smith's No. 1 Wood, SE NW Sec. 21-14-15 .... Drlg. 1,425 ft.
Fields' No. 1 Usker, SE cor. Sec. 35-16-17 ..... Shut down 490 ft.

RAWLINS COUNTY

J. G. Durham et al's No. 1 Unknown, SW cor. Sec. 3-2-35w ..... Shut down 2,533 ft.

RICE COUNTY

Detrick & Langston's No. 1 Purcell, NW cor. Sec. 33-19-9w ..... Rig.
McFadden and Shell's No. 1 Jennings, SW NE NW Sec. 29-18-6w ..... T. D. 1,450 ft.; plugging back to 1,130 ft.
Cress et al's No. 1 Sharp, SE NE Sec. 13-20-10w ..... Drlg. 3,150 ft.
Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w.. Rig.

RENO COUNTY

Shell-Continental's No. 1 Blake, SW SE SE Sec. 23-23-4w. Shut down 700 ft.

ROOKS COUNTY

Empire Oil & Ref. Co.'s No. 1 Halsman, SW NE SE Sec. 17-7-20w ..... Drlg. 1,735 ft.

RUSH COUNTY

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w ..... Landing 12-in. csg. 1,190 ft.

RUSSELL COUNTY

Hall et al's No. 1 Mills, SE SW SE Sec. 30-14-13w ..... Fishing 250 ft.
Agate Oil & Gas Co.'s No. 1 Rochfellow, SE cor. Sec. 6-13-12w ..... Drlg. 3,352 ft.
Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w .... Shut down 2,814 ft.

SEDGWICK COUNTY

Buck et al's No. 1 McNananan, NE NW NW Sec. 2-29-1.. Drlg. 1,630 ft.

SALINE COUNTY

Stanolind Oil & Gas Co.'s No. 1 Martin Com., NE SE SE Sec. 3-16-3w ..... Rig.
Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w ..... Shut down 2,700 ft.

SHERIDAN COUNTY

Flo et al's No. 1 Shoemaker, SE SW SW Sec. 27-7-26w... Drlg. 800 ft.

STAFFORD COUNTY

Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE Sec. 11-24-13w ..... Rig.

STEVENS COUNTY

Sidwell et al's No. 1 Kelly, SW NE Sec. 16-34-38w ..... Rigging up standard tools 2,651 ft.

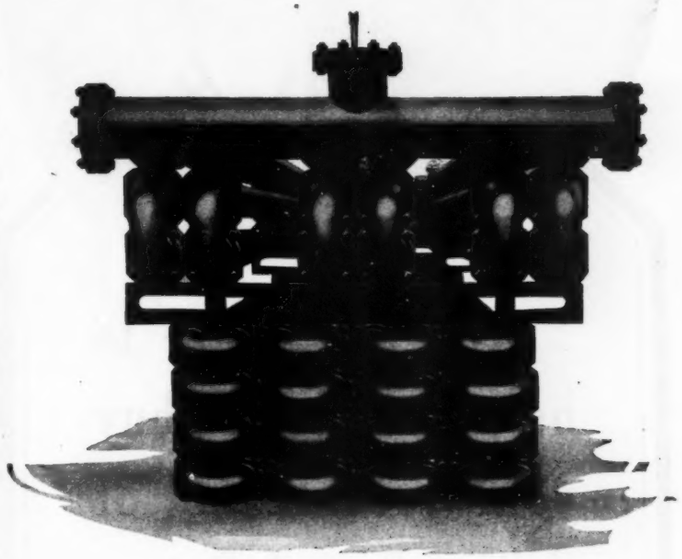
WASHINGTON COUNTY

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3 .... Shut down 1,720 ft.

SUMMARY OF STATEMENTS MADE MARCH 10, 1931, RELATING TO BUSINESS OF VARIOUS PIPE LINES FOR MONTH ENDING FEBRUARY 28, 1931

	Gross stocks	Runs from wells	Other receipts	Regular deliveries	Other deliveries
Nat. Transit	823,437.33	121,907.94	770,702.44	434,836.96	471,182.67
S. W. Pa. P. L.	432,681.19	66,984.81	634,283.45	349,431.73	349,347.35
Eureka P. L.	1,599,276.50	271,589.18	404,272.62	329,203.94	395,745.32
Buckeye P. L. (Macksburg)	592,937.82	283,050.42	129,180.22	255,836.89	171,106.82
Buckeye P. L. (Lima, etc.)	4,308,481.54	78,304.68	1,867,682.82	1,846,381.03	831,489.37
Buckeye P. L. (Cleveland)	38,449.38	10,192.86	113,426.99	1,708.34	128,074.01
Indiana P. L.	546,697.37	3,593.88	1,159,051.32	704,037.29	474,665.36
Cumberland P. L.	445,136.76	158,426.03	.....	95,198.72	43,119.58
Southern P. L.	323,636.70	.....	179,613.47	36,945.86	85,553.55
Bradford Trans.	141,883.72	286,659.50	.....	337,789.39	.....
N. Y. Transit	130,111.18	25,972.80	95,971.04	158,600.37	3,232.66
Northern P. L.	325,464.55	.....	329,230.61	159,788.80	210,006.72
Tide Water P. L.	944,684.28	28,230.27	.....	454,444.14	.....
Tuscarora Dev.	13,749.38	.....	.....	335,137.21	.....
Total Feb. 28	10,856,629.60	1,329,911.87	5,683,416.02	4,999,343.68	3,971,526.20
Total Jan. 31	11,155,391.34	1,451,882.88	6,036,462.04	5,071,232.91	3,403,503.61
Difference	298,761.74	121,971.01	353,046.02	71,889.23	331,975.41

a Friend Named This the "SARDINE COIL"



RECENTLY, a visitor to our shops was inspecting the Simplex Square-Flanged Condenser Coil shown here. "You folks should name this the 'Sardine Coil'," he remarked. "I never saw such a compact coil!" Though made in a spirit of fun, his remarks emphasize the great improvement in coil construction made possible by our new

SIMPLEX SQUARE-FLANGED CONDENSER PIPING

This new piping provides an enormous space saving as compared with flanged pipe, round-flanged Simplex pipe, or steel pipe with standard companion flanges. Space savings as high as 50% (or even greater, depending on design of coil) can be effected with this new pipe. A greater amount of condensing area can be obtained in a box of equal size with Square-Flanged Simplex Condenser Piping than with any other type of piping or condensing material now available. Complete details are included in our new illustrated catalog "Square-Flanged Condenser Piping"—a copy of which will be mailed you free on request.

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM, ALABAMA

Branches: New York City, Chicago, Minneapolis, Kansas City, Detroit, Cleveland, Dallas, Los Angeles, San Francisco, Seattle.

314 X

You won't have to be persuaded to buy your second reel of Yellow Strand Rotary Drilling Line . . . . . .

Send for Catalog K-2

BRODERICK & BASCOM ROPE CO.
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Factories: St. Louis and Seattle
Branches: New York Seattle Portland Houston

P13R2

Yellow Strand
Rotary Drilling Lines

GASOLINES FROM WEST TEXAS CRUDE OILS

(Continued from Page 30)

Westbrook Field

Oil is produced in this field[4] from two levels, the first at 2,400 feet, in the Clearfork division of the Permian age, and the second, or "Morrison pay," at 3,000 feet at the junction between the Clearfork and Wichita divisions. As in most of the West Texas fields, production is from dolomitic limestone, which is decidedly porous.

Westbrook crude of 25.8° A.P.I. gravity, yields 32 per cent gasoline and has a sulphur content of 3.5 to 4 per cent.

[4]Edwards and Orynski, Structure of Typical American Oil Fields, Vol. 1 (1929).

Crane-Upton Counties

These counties include the McCamey, Church and Fields, and McElroy Pools. The McCamey Field produces oil from an average depth of 1,800-2,300 feet, and the crude has the following characteristics.[5]

[5]Kraemer, Bureau of Mines Report of Investigations No. 2,849.

A.P.I. gravity	24.5
Sulphur, per cent	2.29
Water	Trace
Vis. (Saybolt Universal) at	
70° F. secs.	225
100° F. secs.	110
Pourpoint °F.	Below 5
Color	Greenish black

Distillation data for McCamey crude oil are reported by the Bureau of Mines as follows:

Air distillation — Barometer 741 mm. — First drop: 165° F.

Temp. °F.	Per cent cut	Sum per cent	Specific gravity cut	°A.P.I. cut	Viscosity at 100° F.	Cloud test °F.
UP to 122						
122-167	1.6	1.6	.737	60.5	....	....
167-212						
212-257	1.4	3.0	.753	56.4	....	...
257-302	2.9	5.9	.757	55.4	....	....
302-347	4.5	10.4	.783	49.2	....	....
347-392	4.1	14.5	.805	44.3	....	..
392-437	5.0	19.5	.822	40.6	....	....
437-482	6.7	26.2	.841	36.8	....	....
482-527	7.3	33.5	.858	33.4	....	....
Vacuum distillation at 40 mm.:						
Up to 392	3.1	3.1	.882	28.9	43	Below 5
392-437	6.8	9.9	.890	27.5	54	Below 5
437-482	7.4	17.3	.907	24.5	70	10
482-527	6.4	23.7	.919	22.5	125	30
527-572	8.8	32.5	.927	21.1	230	50

Residuum, 34 per cent; distillation loss, 0 per cent; carbon residue of residuum, 11.7 per cent; carbon residue of crude, 4 per cent.

Following is a summary of yields of products from the McCamey crude:

	Per cent	Specific gravity	°A.P.I.	Viscosity
Light gasoline	1.6	.737	60.5	....
Total gasoline and naphtha	14.5	.776	50.9	....
Kerosene distillate	5.0	.822	40.6	.. .
Gas oil	18.9	.858	33.4	....
Nonviscous lubricating distillate	12.5	.887–.913	28.0–23.5	50–100
Medium lubricating distillate	8.6	.913–.924	23.5–21.6	100–200
Viscous lubricating distillate	6.5	.924–.931	21.6–20.5	....
Residuum	34.0	.984	12.3	....
Distillation loss	0.0	....	....	....

Church and Fields Pool produces oil from an average depth of 2,900-3,200 feet. Analysis of the crude from this field shows the following characteristics:[6]

A.P.I. gravity	31.1
Sulphur, per cent	2.69
Water	None
Viscosity (Saybolt Universal) at 70° F.	69
Viscosity (Saybolt Universal) at 100° F.	50
Pourpoint °F.	Below 5
Color	Greenish black

Bureau of Mines distillation results are tabulated below:

Air distillation — Barometer 746 mm. — First drop: 86°F.

Temp. °F.	Per cent cut	Sum per cent	Specific gravity cut	°A.P.I. cut	Viscosity at 100° F.	Cloud test °F.
UP to 122	1.2	1.2	.681	76.3	....	....
122-167	2.1	3.3				
167-212	3.6	6.9	.711	67.5	....	....
212-257	6.1	13.0	.742	59.2	....	....
257-302	6.2	19.2	.767	53 0	....	....
302-347	3.8	23.0	.782	49.5	....	....
347-392	3.8	26.8	.796	46.3	....	....
392-437	4.6	31.4	.811	43.0	....	....
437-482	6.2	36.6	.825	40.0	....	....
482-527	6.9	43.5	.840	37.0	....	....
Vacuum distillati n at 40 mm.:						
Up to 392	4.6	4.6	.865	32.1	40	10
392-437	5.6	10.2	.875	30.2	47	25
437-482	6.0	16.2	.890	27 5	62	50
482-527	5.7	21.9	.903	25.2	100	70
527-572	5.8	27.7	.910	24.0	180	90

Residuum, 27.6 per cent; distillation loss, 1.2 per cent; carbon residue of residuum, 12 per cent; carbon residue of crude, 3.3 per cent.

The crude oils from the McElroy Pool are obtained from 2,800-2,900-foot levels. One sample showed the following characteristics:[6]

A.P.I. gravity	32.8
Sulphur, per cent	2.40
Water	None
Viscosity (Saybolt Universal) at 70° F. secs.	61
Viscosity (Saybolt Universal) at 100° F. secs.	47
Pourpoint °F.	Below 5
Color	Greenish black

Distillation data are reported by the Bureau of Mines in the following table:

Air distillation — Barometer 742 mm. — First drop: 88°F.

Temp. °F.	Per cent cut	Sum per cent	Specific gravity cut	°A.P.I. cut	Viscosity at 100° F.	Cloud test °F.
Up to 122	1.4	1 4	.682	76.0	....	....
122-167	2.2	3.6	.713	67.0	....	..
167-212	3.7	3.7	.741	59.5	....	...
212-257	5.4	12.7	.766	53.2	....	....
257-302	6.3	19.0	.781	49.7	....	..
302-347	3.5	22.5	.795	46.5	....	....
347-392	4.1	26.6	.810	43.2	....	....
392-437	4.6	31.2	.824	40.2	....	....
437-482	5.0	36 2	.841	36.8	....	....
482-527	7.2	43.4	....	....	....	....

[6]Bureau of Mines Report of Investigations No. 2,849.

(Continued on Next Page)

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The OIL and GAS JOURNAL
Tulsa, Oklahoma

Vacuum distillation at 40 mm.:						
Up to 392	3.5	3.5	.867	31.7	41	10
392-437	6.0	9.5	.873	30.6	48	30
437-482	6.0	15.5	.891	27.3	65	50
482-527	5.0	20.5	.902	25.4	100	70
527-572	6.7	27.2	.914	23.3	180	90

Residuum, 25.9 per cent; distillation loss, 3.5 per cent; carbon residue of residuum, 11.2 per cent; carbon residue of crude, 2.9 per cent.

Removal of sulphur from Crane-Upton crudes is an exceptionally difficult problem even among West Texas oils. Sulphur distribution in an oil from Crane County has been summarized as follows:[7]

[7]Newton & Leach, The Oil and Gas Journal, p. 100 (March 7, 1929).

Fraction—	Per cent sulphur	Per cent sulphur after caustic	Per cent sulphur as H_2S	Per cent sulphur H_2S free oil
1. Start to 50° A.P.I.	0.34	0.11	0.23	0.75
2. 50° to 43° A.P.I.	0.57	0.44	0.13	1.95
3. 43° to 42° A.P.I.	0.60	0.52	0.08	0.52
4. 42° to 38° A.P.I.	0.68	0.60	0.08	2.23
5. Gas oil distillate	0.88	0.84	0.04	4.98
6. Gas oil test	1.04	....	....	4.60
7. Paraffin distillate	1.51	....	....	24.06
8. Paraffin slop	2.53	....	....	2.75
Total				41.84

Settles-Chalk Field

The average producing depth in Settles-Chalk Field is 1,600 feet. Howard County crude contains in some cases 2.35 per cent of sulphur and some salt water, and yields 26 per cent gasoline. Gasoline from this crude can be made doctor sweet and noncorrosive by treating with lead sulphide instead of sulphuric acid. Oil from the Chalk Field has been analyzed by the Bureau of Mines[8] as follows:

First drop: 86°F.

Temp. °F.	Per cent cut	Sum per cent	Specific gravity cut	°A.P.I. cut	Viscosity at 100° F.	Cloud test °F.
Up to 122	1.2	1.2	.689	73.9	....	....
122-167	1.9	3.1	.719	66.3	....	....
167-212	2.3	5.4	.747	57.9	....	....
212-257	4.0	9.4	.772	51.8	....	....
257-302	4.1	13.5	.790	47.6	....	....
302-347	4.0	17.5	.806	44.1	....	....
347-392	3.7	21.2	.820	41.1	....	....
392-437	4.5	25.7	.836	37.8	....	....
437-482	5.7	31.4	.851	34.8	....	....
482-527	6.5	37.9	....	....	....	....
Vacuum distillation at 40 mm.:						
Up to 392	5.0	5.0	.878	29.7	42	15
392-437	5.8	10.8	.888	27.9	49	45
437-482	5.5	16.3	.904	25.0	63	55
482-527	5.2	21.5	.917	22.8	97	75
527-572	6.6	28.1	.929	20.8	180	95

Residuum, 33.9 per cent; distillation loss, 0.1 per cent; carbon residue of residuum, 13.9 per cent; carbon residue of crude, 2.7 per cent.

Hendricks Field

Winkler County crude is produced from an average level of 2,700 to 3,100 feet and ranges in gravity from 28.8° to 30° A.P.I. The oil contains a considerable amount of hydrogen sulphide but shows no salt water. Bureau of Mines[8] reports on a crude from Hendricks Field having the following characteristics:

A.P.I. gravity	30.0
Sulphur, per cent	1.53
Water	None
Viscosity (Saybolt Universal) at 70° F. secs.	77
Viscosity (Saybolt Universal) at 100° F. secs.	56
Pour point °F.	Below 5
Color	Dark green

The crude distilled as follows:

Air distillation — Barometer 746 mm. — First drop: 86°F.

Temp. °F.	Per cent cut	Sum per cent	Specific gravity cut	°A.P.I. cut	Viscosity at 100° F.	Cloud test °F.
Up to 122	1.7	1.7				
122-167	1.6	3.3	.679	76.9	....	....
167-212	1.1	4.4				
212-257	5.3	9.7	.729	62.6	....	....
257-302	4.0	13.7	.758	55.2	....	....
302-347	4.0	17.7	.776	50.9	....	....
347-392	5.0	22.7	.797	46.0	....	....
392-437	5.6	28.3	.820	41.1	....	....
437-482	5.1	33.4	.838	37.4	....	....
482-527	6.7	40.1	.857	33.6	....	....
Vacuum distillation at 40 mm.:						
Up to 392	5.3	5.3	.886	28.2	43	Below 5
392-437	5.7	11.0	.897	26.3	53	Below 5
437-482	5.7	16.7	.913	23.5	76	Below 5
482-527	5.6	22.3	.926	21.3	135	Below 5
527-572	6.6	28.9	.928	21.0	270	Below 5

Residuum, 29.7 per cent; distillation loss, 1.3 per cent; carbon residue of residuum, 8.5 per cent; carbon residue of crude, 2.5 per cent.

A summary of yields of products is given in the table below:

	Per cent	Specific gravity	°A.P.I.	Viscosity
Light gasoline	4.4	.679	76.9	....
Total gasoline and naphtha	22.7	.748	57.7	....
Kerosene distillate	5.6	.820	41.1	....
Gas oil	18.4	.862	32.7	....
Nonviscous lubricating distillate	9.6	.894-.918	26.8-22.6	50-100
Medium lubricating distillate	6.2	.918-.927	22.6-21.1	100-200
Viscous lubricating distillate	6.5	.927-.929	21.1-20.8	Above 200
Residuum	29.7	.973	13.9	....
Distillation loss	1.3	....	....	....

Cracking West Texas Topped Crudes

Samples of mixed West Texas crudes, principally from the Yates and Winkler County Pools, were topped and the residues subjected to commercial cracking operations. The topped crudes were analyzed and showed the following properties:

Sample No.—	1	2	3	4
A.P.I. gravity	20.5	22.3	21	21.3
Initial boiling point °F.	452	410	430	451
Per cent over @ 572° F.	11.5	14.0	9.0	11.0
Furol viscosity @ 122° F.	29	21	30	25
B.s. and water, per cent	....	0.2	....	....
Sulphur, per cent	....	1.6	....	....

Summary of Cracking Results

Some of these tests were run by the flashed residue method and some by simultaneous cracking and coking. Results of the tests of these two methods are shown below:

(Continued on Next Page)

	Flashed residue operation		Simultaneous cracking and coking operation	
Charge, total bbls.	60,117	65,516	4,332	4,608
Pressure distillate, per cent	50.51	47.08	77.0	76.16
A.P.I. gravity	51.4	53.0	51.4	50.8
Flashed residue, per cent	46.34	43.3	0	0
A.P.I. gravity	14.0	14.8	....	.....
Coke (pounds per barrel)	0	0	83.6	63.9
Gas (cu. ft. per bbl.)	250	.....	600	.....

GASOLINE AND PRESSURE DISTILLATE BOTTOMS
(Per cent based on charge)

Gasoline, per cent	40.16	40.04	60.83	62.46
Pressure distillate bottoms, per cent	9.35	12.00	15.00	12.50

Operating Conditions

The conditions of temperature and pressure for the cracking of topped West Texas crude oil are shown in the following table:

Pressure (pounds)	195	190	195	195
Temperature, °F.	884	879	911	913
Charge, bbls. per day	3,681	2,980	2,810	2,404
Hours on pressure distillation	392	515	37	46

Pressure Distillate Treatment

The pressure distillate obtained from these cracking operations was refined by treatment with sodium plumbite, sulphuric acid and water. The treated distillate was then distilled, in the presence of steam, to finished gasoline and pressure distillate bottoms.

Flashed Residuum

The flashed residue from the cracking operation had a low viscosity, pourpoint and sediment. It also had a higher B.t.u. content per barrel than the topped crude oil from which it was derived.

The physical characteristics of the flashed residue are shown below:

A.P.I. gravity	14.8
B.s. and water (300.31)	0.2
Furol viscosity @ 122° F.	22 secs.
Flashpoint (P-M) °F.	130
Pourpoint °F.	—0
Over @ 572° F., per cent	18.0
Sulphur, per cent	1.6
Calorific value (B.t.u. per lb.)	17,950

Coke

The coke produced in the cracking and coking operation is of honeycomb structure and is recovered partly in lump form and partly as "fines." Typical analysis of the coke is shown in the following table:

Specific gravity @ 60° F.	1.32
	Per cent
Volatiles	16.71
Fixed carbon	83.04
Ash	0.15
Moisture	0.10
Sulphur (included in fixed carbon)	1.97
Benzol soluble (included in volatiles)	4.58
B.t.u., per pound	15,500

Incondensable Gas

The samples of the gases produced in cracking West Texas topped crude and taken, respectively, from the high pressure and low pressure receivers of the cracking installation analyzed as follows:

	High pressure gas	Low pressure gas
Spec. grav. (air = 1)	0.683	0.88
B.t.u. (per cu. ft.)	1,070	1,590
H_2S (grains per 100 cu. ft.)	680	1,090
Gasoline (gals. per 1,000 cu. ft.)	....	7.0

Cracking West Texas Kerosene

A kerosene distillate derived from a mixture of West Texas crudes, consisting chiefly of those from the Yates and Winkler Pools, was subjected to cracking tests by the flashed residuum operation.

The distillate used had an initial boiling point of 410° F. and contained 94.5 per cent of hydrocarbons boiling below 572° F. The kerosene distillate was naphthenic in character, analyzing as follows:

West Texas Kerosene Distillate

A.P.I. gravity	36.4
Flash (Cleveland) °F.	195
Fire (open cup) °F.	215
Flash (Pensky-Martin) °F.	175
Cold test °F.	—36
B.s. and water, per cent	Trace
Sulphur, per cent	0.53

A.S.T.M. (100 cc. Distillation)

Initial boiling point	410°F.
Per cent distilled over	°F.
10	449
20	450
30	460
40	464
50	478
60	487
70	500
80	575
90	549
Endpoint	625
Per cent @ 437° F.	7.5
Per cent @ 572° F.	94.5

Operating Conditions

The average temperature and pressures used during the tests are shown below:

Test No.—	1	2	3
Pressure (lbs.)	350	350	400
Temperature °F.	948	950	949

The gasoline, residue and gas yields derived from the cracking operation are defined in the following table. The gasoline percentage based on the kerosene stock includes that which was scrubbed out of the incondensable gas.

Summary of Product Yields
(Based on the kerosene)

Gasoline, per cent	71.8	70.1	72.0
Flashed residue, per cent	13.3	13.2	11.3
Gas (cu. ft. per bbl.)	762	731	688

Properties of the Gasoline

The gasolines produced by cracking West Texas kerosene are high in knock rating and volatility. They were tested in a "Series 30" Ethyl motor test apparatus. The knock ratings were 67 and 71 per cent benzol equivalent, 84 and 89 "octane number." The standard for Ethyl Gasoline is 74 octane number and 59 per cent benzol equivalent.

The distillation ranges of the gasoline samples by the A.S.T.M. 100 cc. method were as follows:

Test No.—	1	2	3
A.P.I. gravity	58.7	57.7	56.6
Init. boiling point °F.	88	90	96
Per cent distilled over	Temp. °F.		
20	166	175	188
50	243	260	269
90	339	352	364
Endpoint	374	377	396
Gums (mgs. 100 cc. copperdish)	10	5	22

Knock Rating

	Ethyl standard gasoline			
Octane number	74	89	89	84
Benzol equiv., per cent	59	71	71	67

Chemical Treatment of Cracked Gasolines

The gasolines from the various tests were treated with sulphuric acid in various amounts and then water-washed and neutralized with caustic soda. In another set of treating experiments the first 30, 40 and 50 per cent fractions of the cracked gasoline were separated and showed colors of 28 and 30. These fractions required no chemical treatment.

The bottoms from a 40 per cent gasoline fraction was treated with acid, water and caustic soda and distilled to endpoint gasoline.

The untreated and treated fractions were then blended and analyzed for their properties. The results of the various treating tests are shown in the table:

ANALYSES OF GASOLINE

Gums mgs.	145
Sulphur, per cent	0.14

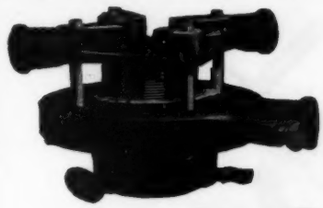
ANTIKNOCK

Per cent benzol equivalent	69
Octane number	86
Initial boiling point °F.	92
Per cent over	Temp. °F.
10	138
20	172
50	253
90	350
Endpoint	380

Flashed Residuum

The properties of the flashed residues are shown in the following table:

Test No.—	1	2	3
A.P.I. gravity	0.2	0.3	0.1
B.s. and water, per cent	1.0	0.3	0.5
Furol vis. 122° F. sec.	43	39	72
Flash (Cleveland) °F.	190	200	165
Fire (open cup) °F.	250	260	250
Flash (Pensky-Martin) °F.	175	185	150
Cold test °F.	16	16	24
Init. boiling point °F.	408	410	421
Per cent distilled over @ 572° F.	34.0	34.5	32.0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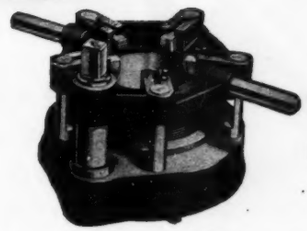
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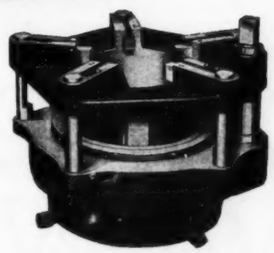
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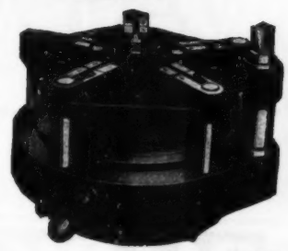
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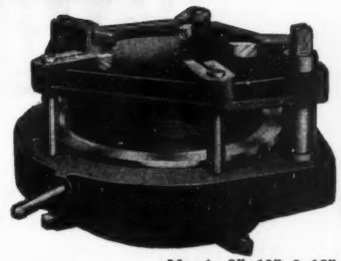
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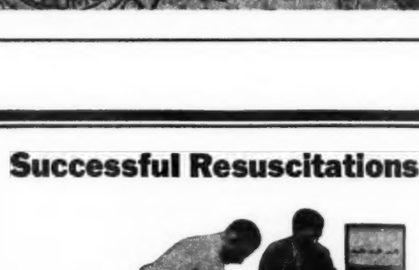

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"EVERYTHING FOR MINE AND INDUSTRIAL SAFETY"

CHEMICAL DETECTION OF LEAKS IN GAS DISTRIBUTION SYSTEMS

By Charles F. Turner
Chief Chemist, The East Ohio Gas Co., Cleveland, Ohio*

We shall attempt only to outline in the briefest possible way some of the methods now employed by the East Ohio Gas Co. in maintaining its distribution system at a high standard. One measure of such a standard is the figure for leakage per year per mile of equivalent 3-inch main. As a basis for determining this figure the recommendations of the committee on gas measurement have been followed in revamping border meter installations so that there may be no question of the accuracy of input measurements.

In order to keep the leakage figure within the limits prescribed by good practice constant efforts must be exercised to detect and repair leaks which occur in the system. If this effort is to be highly effective some form of systematic inspection of lines should be employed. Methods used for discovering leaks in one city may not be suitable for use in others. We are using very successfully a procedure which will be described in this paper.

Gas companies using the spud bar know that spudding is for the most part a haphazard, blindfolded, needle-in-the-hay-stack, costly way of running down a leak. It is indispensable under some conditions and can be made a valuable aid under others but we have replaced for regular practice spudding over mains and services with another method which discloses leaks more quickly and positively, with greater safety and at far less cost. This is the systematic inspection of underground vaults, cable ducts, water meter vaults, water department gate boxes, sewers, curb boxes, etc., with conbustible gas detectors.

Chemical Tests

About 10 years ago we discovered that chemical tests made on the atmospheres in underground vaults on streets carrying duct lines furnished us with a very reliable index as to the tightness of the mains. We began sampling in systematic fashion all manholes on these streets in Cleveland which carry intermediate pressure, large or numerous mains, paying particular attention to those in congested areas.

Samples were taken in citrate of magnesia bottles, then carried to the laboratory and analyzed for the kind of gas and its concentration. This process was slow and laborious but it was so much faster than spudding that it increased each year and in many instances superseded spudding entirely. Chief objections to it are the time elapsing between sampling and the report from the laboratory, and the large number of samples containing no gas which must be analyzed in order to find those which do. The last year in which we used this method our records show that only one sample out of 58 contained gas.

In 1929 we purchased the first gas detectors of a type which we believe practical for street survey work. That they have demonstrated their value is attested by the fact that we have 30 of them. Their only limitation, and that is not a really serious one, is the fact that the maximum amount of combustible gas which can be read on them is approximately 3.5 per cent, which is the lower explosive limit of a gas and air mixture. The way in which this limitation is met will be brought out in the following description of our organized survey procedure.

Patrolling Crews

Under our present system, gradually developed and extended during the past several years, Cleveland has been divided into five districts which are patrolled at regular intervals. Each is proportioned in area according to density of traffic. We have found it desirable to have two men in each patrolling crew. One or more crews work out of the district shops and report directly to the chief chemist. Their equipment consists of a detector, a 36-inch spud bar, a short pinch bar, flags and notebook. A roving inspector observes their work in the streets, gives out street assignments, and contacts with the repair department foreman in arranging for additional tests at any time or place.

When gas is found beneath the cover of a manhole, the location of the manhole and the instrument reading are noted. This information is phoned to the laboratory twice a day.

In addition to the street crews another crew equipped with a Ford pickup car, indicator, sampling tubes, which we have found preferable to bottles, handles special complaints, investigates particular localities requiring frequent observation and samples all manholes reported by the street crews to have given an indication on the detector of "explosive," which is the maximum reading obtainable and indicative of 3.5 per cent or more of gas. Such samples, as well as others taken for special reasons, are brought to the laboratory for analysis and identification. Detector readings for concentrations less than 3.5 per cent are multiplied by a factor for the lower explosive limit and entered on the complaint slips without sampling. This crew phones in to the laboratory at regular intervals for assignments or instructions.

Methods Employed

In case gas is reported on streets carrying both natural and manufactured gas lines the roving crew determines, on the job, whether natural or manufactured gas is leaking by first taking a reading on the detector, then a sample and finally lowering a carbon detector ampoule into the hole. If the white cotton ampoule turns brown it indicates the presence of carbon monoxide; natural gas contains no carbon monoxide, manufactured gas around 7 per cent.

Upon completion of the analysis of the sample in the laboratory, the kind of manhole together with its location and gas content is entered upon a complaint slip, which is sent to the street repair department, and also upon a laboratory record file card. Another file card shows the streets surveyed, date surveyed, from where to where and by whom; such records are very important for check-up purposes.

The complaint slips go to the street repair department for investigation. The per cent gives the department an idea of the relative seriousness of the leaks; by assembling slips in numerous order of street numbers a fair idea is obtained as to the approximate location of a leak; spudding and testing of spud holes with the indicator locate it more accurately.

After the leak is located and repaired the foreman enters on the complaint slip a report of his findings and the repairs made; he then returns it to the laboratory where it becomes known as a "recheck." The manhole is again tested; if no gas is found the slip is marked "O.K." and filed; if gas is found it is again sent through the above routine.

Before adopting the present method our repair department was in the habit of spudding at short intervals just inside the curb stone. These stones are usually set on a cinder or gravel base and in case gas is leaking from a main it often finds an easy passage to the surface through this area. The installation of electric street lights throughout the city made this practice very costly and somewhat dangerous. Light cables are often strung in a shallow trench just inside the curb; we have punctured a number of them as well as a number of telephone and telegraph cables. General spudding is now restricted to special cases where we wish to know whether gas from a leak discovered at the main is finding its way into building basements. A line of spud holes between the sidewalk and building, and parallel to them, will quickly determine this. It can be done, of course, only where conditions will permit, usually in residential districts.

Since all our services are equipped

*Before Distribution Section, Ohio Gas and Oil Men's Convention, Columbus, Ohio.

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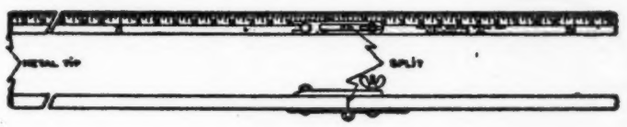

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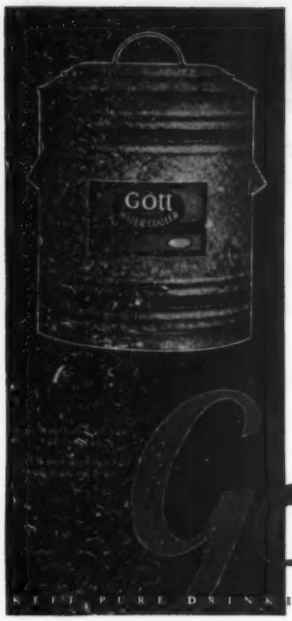

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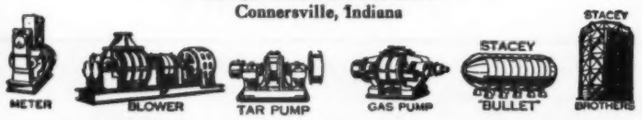

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The OIL and GAS JOURNAL
PRODUCING REFINING MARKETING
TULSA, OKLA.

with curb cocks, we are substituting this winter for spudding an inspection of curb boxes with the detector; we find it faster and, so far, just as effective. This work is carried on by crews under the supervision of the repair department. Cock core leaks are differentiated from more serious service and main leaks by uncovering the box and airing it for several minutes before testing; gas from a cock leak soon disappears but that from a hole in a service or main continues to register.

An important phase of leak detection is the examination of the ducts themselves which enter and leave the vaults of the telephone, telegraph, illuminating and other companies. By co-operation with the owners of such systems accidents and explosions may be avoided. The detector is taken down into the vaults and each duct tested separately. Some may show high concentrations, others beside them none.

Recognition must be given to the fact that not all cities and few towns are supplied with a sufficient number of vaults, curb boxes or other openings to make practical a system of leak detection such as we have outlined. With no duct systems it is safe to assume there will be few buried cables and spudding may be resorted to with greater safety. The detector expedites the work, removing from it much of the element of uncertainty and imparting to it some degree of exactitude.

Use of Odorants

Leaks may appear larger or more prevalent during thawing periods following cold snaps. Under normal temperature conditions gas escaping from leaks and seeking the path of least resistance may find its way to the surface rather than into vaults and manholes; when the surface of the ground is frozen or blanketed with snow it may be forced to collect in these voids.

We have not found the introduction of odorants into natural gas eminently successful as a means of locating leaks in distributing mains. In a more or less experimental way they have been injected into the low pressure side of district regulators with the hope that the odor would assist in tracing leaks in mains and services; results have been very discouraging. All of the complaints received were from leaks beyond the meter and in the house lines.

Some three months ago we put into operation an automatic odorizing station on a regulator supplying most of downtown Cleveland, an area of approximately 2 square miles. The amount introduced per 1,000,000 cubic feet can be very accurately proportioned. Starting in with a rate of 1 gallon per 1,000,000 cubic feet the amount has been gradually increased in 1 gallon increments until at the present time it has reached 4 gallons per 1,000,000 cubic feet. To date one may count on the fingers of one hand the complaints received. All manner of explanations may be given for the dearth of complaints; insufficient time; too low a rate; mains not yet saturated; mains, services and appliances all tight. The odor imparted to the gas throughout the district is believed sufficiently noticeable to have caused certain detection of large leaks before this.

There is one use of odorants which has been attended with highly satisfactory results, that is the inspection of house lines in factories. Piping in many industrial plants is more subject to leakage than in residences or office buildings because of more vibration and exposure, more weight or possible higher pressures. During the past year we have "checked and double checked" approximately 130 factories in Cleveland. The procedure is to tap the service following the meter and by means of an equalized pressure, gravity feed, dropper type lubricator inject odorant. A close inspection of the lines then brings to light all manner of leaks, big and small. These are marked for repair, a report of their locations is furnished the factory management and after they have had time to effect repairs a second test is made. We furnish this service to the consumer free, the only stipulation being that he agrees to repair the leaks. This service has met with the enthusiastic approval of practically all the factories approached.

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It expands when subjected to heat and makes leak-proof joints that hold tight under all conditions of service. *Yet these joints may be taken apart with ease at any time.*

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They Believe in *USING* C-F Regulators *as well as in SELLING them*

New gas-fired billet furnace recently installed by The Surface Combustion Co. for National Supply Co. at Toledo, Ohio. Note C-F regulator at upper left.

FOR many years distributors of Chaplin-Fulton Regulators, National Supply Company knows that no matter how new and improved the process might be, Chaplin-Fulton keeps pace with industrial developments by supplying regulators that will meet new demands. They sell C-F and they use C-F for their own regulation requirements.

The Chaplin-Fulton Mfg. Co.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Report for Month of January

Runs

	Month bbls.	Dly. av. bbls.
Prairie P. L. Co.*	889,700	28,700
Gulf P. L. Co.	1,271,476	41,015
Texas P. L. Co.	737,838	23,801
Magnolia P. L. Co.	1,716,263	55,363
Empire P. L. Co.	2,016,090	65,035
Cosden P. L. Co.	777,611	25,084
Stanolind P. L. Co.*	2,976,000	96,000
Oklahoma P. L. Co.	2,306,285	74,396
Other lines*	5,530,000	180,000
Total January	18,271,263	589,394
Total December	18,247,639	588,632
Difference	23,624	761

Shipments

Prairie P. L. Co.	2,207,392	71,206
Gulf P. L. Co.	1,302,534	42,017
Texas P. L. Co.	864,399	27,884
Magnolia P. L. Co.	1,624,554	52,405
Empire P. L. Co.	1,846,332	59,556
Cosden P. L. Co.	808,987	26,096
Stanolind P. L. Co.	2,943,576	94,954
Oklahoma P. L. Co.	2,455,605	79,213
Other lines*	5,549,000	179,000
Total January	19,602,309	632,331
Total December	17,899,960	577,419
Difference	1,702,349	54,912

Stocks

Prairie O. & G. Co.*	38,000,000
Gulf, P. L.-Gypsy Oil Co.	7,964,315
The Texas Company	3,873,693
Magnolia Petroleum Co.	5,815,317
Empire P. L. Co.	5,470,618
Mid-Continent Pet. Corp.	3,641,294
Stanolind Crude Oil Pur. Co.*	18,277,000
Oklahoma P. L. Co.	2,594,116
Carter Oil Co.	9,786,208
Other lines*	
Total January	119,400,561
Total December	119,753,742
Difference	353,183

*Estimated. Prairie and Stanolind shipments include Texas crude oil.

EASTERN PIPE LINE REPORT FOR FEBRUARY

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for January and February:

	Jan., 1931	Feb., 1931
Nat. Transit	127,013.27	121,907.94
S. W. Pa. P. L.	75,179.62	66,984.81
Eureka P. L.	293,615.52	271,589.18
Buckeye P. L. (Macksburg)	311,885.14	283,050.42
Buckeye P. L. (Cleveland)	11,175.80	10,192.36
Buckeye P. L. (Lima, etc.)	91,601.51	78,304.68
Indiana P. L.	3,805.02	3,595.88
Cumberland P. L.	174,361.92	158,426.03
N. Y. Transit	27,836.13	25,972.80
Tide Water P. L.	25,747.99	23,230.37
Pure Oil	220,231.74	188,721.57
Stoll Oil Ref.		25,934.10
Bradford Tran.	310,660.96	286,659.50
Total	1,672,114.62	1,544,567.64
Daily average	53,939.18	55,163.13

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for January and February:

	Jan., 1931	Feb., 1931
Nat. Transit	431,427.59	434,836.96
S. W. Pa. P. L.	311,121.19	349,431.73
Eureka P. L.	333,443.59	329,203.94
Buckeye P. L. (Macksburg)	257,687.49	255,836.89
Buckeye P. L. (Cleveland)	1,462.63	1,703.34
Buckeye P. L. (Lima, etc.)	1,121,462.88	1,346,381.03
Indiana P. L.	644,291.15	704,037.29
Cumberland P. L.	109,598.07	95,198.73
Southern P. L.	65,326.45	36,948.86
N. Y. Transit	174,756.42	158,600.37
Northern P. L.	230,189.96	159,788.80
Tide Water P. L.	536,454.77	454,444.14
Pure Oil	86,532.61	138,500.91
Indian Ref.	278,699.79	
Bradford Tran.	364,290.68	337,789.39
Tuscarora	489,729.45	335,137.21
Total	5,436,465.31	5,137,844.59
Daily average	175,369.85	183,494.45

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of January and February:

	Jan., 1931	Feb., 1931
Nat. Transit	839,235.79	823,437.33
S. W. Pa. P. L.	432,473.26	432,661.19
Eureka P. L.	1,548,201.04	1,599,276.59
Buckeye P. L. (Macksburg)	597,544.40	592,987.82
Buckeye P. L. (Cleveland)	54,263.96	38,449.28
Buckeye P. L. (Lima, etc.)	4,554,991.51	4,308,481.54
Indiana P. L.	562,567.51	546,607.37
Cumberland P. L.	623,458.27	645,138.76
Southern P. L.	265,515.03	323,636.70
N. Y. Transit	161,624.59	120,111.18
Northern P. L.	368,986.82	325,464.55
Tide Water P. L.	979,269.83	944,684.28
Pure Oil	605,621.04	649,860.39
Indian Ref.	70,080.52	
Tuscarora	14,447.96	13,749.38
Brad. Trans.	152,811.37	141,883.72
Total	11,831,092.90	11,506,489.99
Increase	79,140.49	
Decrease		324,602.91

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of January and February, showing gross stocks of the above fields:

	Jan., 1931	Feb., 1931
Pennsylvania	3,904,310.87	3,844,013.10
Lima	800,240.43	804,771.54
Kentucky	665,271.73	655,160.44
Mid-Continent	5,863,671.90	5,564,627.27
Illinois	3,659.28	
Michigan	593,938.69	637,917.64
Total	11,831,092.90	11,506,489.99

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1928	1929	1930	1931
January	52,904	51,749	75,907	53,939
February	57,002	51,833	79,256	55,163
March	57,485	54,252	76,688	
April	56,812	58,444	84,536	
May	62,067	59,902	80,548	
June	58,230	58,833	76,430	
July	57,144	66,087	68,921	
August	57,745	66,087	54,291	
September	53,487	67,316	56,595	
October	58,100	76,093	58,179	
November	53,865	74,821	52,232	
December	52,025	74,561	53,999	

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1928	1929	1930	1931
January	146,465	165,721	217,623	175,369
February	167,368	159,387	224,355	183,494
March	158,883	161,474	238,846	
April	172,935	169,737	241,845	
May	180,559	184,231	248,383	
June	188,024	185,404	234,401	
July	189,470	194,763	207,094	
August	192,853	194,946	205,506	
September	194,138	201,214	193,999	
October	176,000	191,367	157,675	
November	176,898	202,743	146,638	
December	173,572	186,257	143,001	

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1929	1930	1931
January	7,596,564	12,220,045	11,831,092
February	8,738,835	12,991,561	11,506,489
March	9,002,058	13,247,217	
April	8,978,172	13,233,961	
May	8,903,560	13,052,953	
June	8,921,275	13,396,855	
July	9,211,595	13,268,562	
August	9,440,642	13,047,051	
September	9,442,067	12,812,918	
October	9,441,101	12,427,555	
November	9,868,538	11,851,380	
December	11,253,953	11,751,952	

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, March 1	1,920,356.58
Runs from wells	406,054.17
Other receipts	107,696.79
Regular deliveries	438,310.11
Other deliveries	99,696.61

The amount of Illinois oil run by the Tide Water Pipe Co. in February was 23,230.37 bbls. Deliveries were 22,952.74 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

	Runs	Deliveries
1931—		
January	468,429.04	669,573.19
February	429,284.54	461,262.85
1930—		
January	543,387.95	498,293.92
February	548,416.33	414,536.59
March	631,944.49	469,119.53
April	530,074.22	509,304.60
May	605,147.37	504,069.84
June	572,662.57	468,658.81
July	604,529.54	388,454.47
August	594,642.12	375,742.43
September	467,001.11	371,691.63
October	478,442.12	320,688.73
November	422,794.68	355,403.12
December	556,418.78	363,719.55

Tide Water Pipe Co., Ltd., also delivered in February 122,174.15 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1930-31—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
February	7,678	.....	24,714	14,321	5,000	51,714	.....	.....	.....	.....	2,607	54,321
March	10,648	3,065	28,871	8,774	22,484	73,742	.....	.....	.....	.....	805	74,548
April	7,767	.....	14,369	11,600	7,433	41,167	.....	.....	.....	.....	7,600	48,767
May	5,194	3,451	28,161	9,484	2,774	54,064	.....	.....	.....	.....	774	54,838
June	8,300	.....	33,933	20,767	2,333	65,333	.....	.....	.....	.....	2,400	67,733
July	17,355	7,774	43,419	23,839	6,452	98,839	.....	.....	.....	.....	4,645	103,484
August	7,413	8,742	38,968	21,226	5,258	81,613	.....	.....	.....	.....	97	81,710
September	6,300	6,400	25,600	13,400	9,567	61,267	.....	.....	.....	.....	2,433	63,700
October	2,516	3,065	27,258	16,419	4,903	54,161	.....	.....	.....	.....	5,355	59,516
November	8,367	6,233	33,800	17,733	4,600	70,733	.....	.....	.....	.....	4,800	75,533
December	5,516	4,323	30,645	9,678	3,580	53,742	.....	.....	.....	.....	4,645	58,387
January	8,387	6,613	21,968	14,678	11,096	62,742	.....	.....	.....	.....	6,129	68,871

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1930-31—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
February	24,500	14,714	147,357	36,036	39,786	262,933	2,821	11,072	3,500	1,964	19,357	281,750
March	28,355	4,839	151,806	36,645	34,903	255,548	4,323	11,645	839	2,419	19,226	274,774
April	31,400	8,933	123,500	40,433	19,434	223,700	.....	7,400	2,433	4,167	14,000	237,700
May	24,129	9,322	174,194	39,291	28,226	275,161	8,194	11,548	2,935	1,323	24,000	299,161
June	51,533	15,667	121,067	45,033	25,033	258,333	4,413	17,367	2,167	1,333	25,300	283,663
July	42,097	9,548	154,968	37,935	36,032	280,580	5,678	9,161	2,097	2,387	19,323	299,903
August	39,032	4,484	145,613	33,355	25,097	247,581	8,419	9,322	8,548	3,000	29,290	276,871
September	35,867	5,533	150,933	34,500	25,567	258,400	6,433	12,234	.....	3,800	22,467	280,867
October	19,839	11,742	146,194	35,355	26,967	240,097	6,065	7,067	2,774	2,545	18,451	258,548
November	39,633	35,900	124,633	36,467	24,667	261,300	2,467	7,366	.....	1,767	11,600	272,900
December	21,419	14,033	122,774	32,839	33,774	224,839	6,290	10,613	2,097	290	19,290	244,129
January	17,613	13,519	154,225	32,902	30,612	248,871	2,032	11,677	2,097	3,097	18,903	267,774

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1930—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
February:	Month	20,885,660	17,977,624	23,314,637	2,965,704	1,608,376	1,738,250	2,027,984	3,963,000	74,481,235
	Daily average	745,916	642,058	832,669	105,918	57,442	62,080	72,428	141,536	2,660,044
March:	Month	19,699,979	19,115,406	25,503,082	3,504,395	1,817,871	1,942,938	2,337,028	4,223,000	78,143,699
	Daily average	635,483	616,626	822,679	113,045	58,641	62,675	75,388	136,161	2,520,764
April:	Month	18,768,743	19,541,310	24,799,763	3,734,253	1,724,460	1,909,552	2,334,810	4,257,000	77,069,891
	Daily average	625,625	651,377	826,659	124,475	57,482	63,652	77,827	141,900	2,568,996
May:	Month	19,044,444	20,587,503	26,219,488	3,978,385	1,659,895	1,907,482	2,565,219	4,414,000	80,376,776
	Daily average	614,337	664,113	845,786	128,335	53,545	61,543	82,749	142,387	2,592,799
June:	Month	18,020,795	19,754,700	25,643,705	3,765,060	1,704,060	1,925,621	2,519,190	4,288,000	77,621,131
	Daily average	600,693	658,490	854,790	125,502	56,802	64,187	83,973	142,933	2,587,371
July:	Month	18,802,024	18,032,514	25,973,521	3,541,409	1,713,680	2,079,769	3,275,894	3,830,000	77,248,811
	Daily average	606,517	581,694	857,856	114,239	55,280	67,089	105,674	123,548	2,491,897
August:	Month	18,770,466	17,162,034	25,069,598	3,491,530	1,700,102	2,151,120	3,193,341	3,417,000	74,955,191
	Daily average	605,499	553,614	808,696	112,630	54,842	69,391	103,011	110,226	2,417,909
September:	Month	17,984,306	16,509,120	23,111,822	3,405,510	1,583,280	2,008,060	3,239,010	3,396,000	71,237,108
	Daily average	599,477	550,304	770,394	113,517	52,776	66,935	107,967	113,200	2,374,570
October:	Month	18,244,053	16,632,523	23,626,553	3,571,913	1,636,552	2,142,885	3,225,550	3,627,000	72,707,029
	Daily average	588,518	536,533	762,147	115,223	52,792	69,125	104,050	117,000	2,345,388
November:	Month	18,109,459	14,941,770	22,035,222	3,459,330	1,557,870	2,136,948	2,957,100	3,222,000	68,419,699
	Daily average	603,648	498,059	734,507	115,311	51,929	71,231	98,570	107,400	2,280,656
December:	Month	17,786,728	15,057,103	21,810,359	3,432,661	1,590,951	2,157,534	3,118,663	3,328,000	68,281,999
	Daily average	573,765	485,713	703,560	110,731	51,321	69,598	100,602	107,355	2,202,645
1931—										
January:	Month	16,485,798	14,850,953	20,690,452	3,149,073	1,574,955	2,131,937	2,966,142	3,374,000	65,223,310
	Daily average	531,793	479,063	667,435	101,583	50,805	68,772	95,682	108,839	2,103,978
	Total 12 months	222,602,455	210,162,560	287,798,202	41,999,223	19,872,052	24,232,456	33,759,931	45,339,000	885,765,879